WANDFLUH
Hydraulics + Electronics

POPPET VALVES

Edition 15 18

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OVERVIEW SCREW-IN CARTRIDGES

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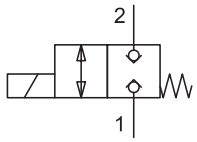
Poppet valve direct operated 	Type	**SDSPM18-BA**						**SDSPM22-BA**					
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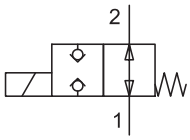
Poppet valve direct operated 	Type	**SDSPM18-AB**						**SDSPM22-AB**					
	Data sheet no.	1.11-2050						1.11-2060					
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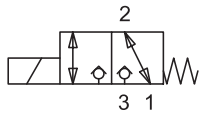
Poppet valve direct operated 	Type	**SDSPM18-FG**						**SDSPM22-FG**					
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	Type							**SDYPM22-FG**	•				
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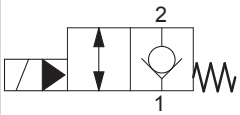
Poppet valve pilot operated 	Type	**SVSPM18-BC**		**SVSPM20-BC**		**SVSPU08-BC**		**SVSPM22-BC**		**SVSPM33-BC**			
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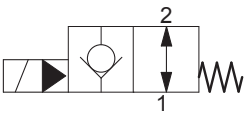
Poppet valve pilot operated 	Type	**SVSPM18-CB**		**SVSPM20-CB**		**SVSPU08-CB**		**SVSPM22-CB**		**SVSPM33-CB**			
	Data sheet no.	1.11-2080		1.11-2081		1.11-2083		1.11-2082		1.11-2076			
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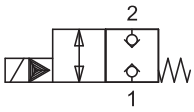
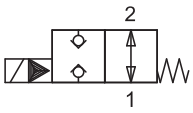
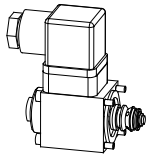
• Execution Ex d

Function		Size											
		M18x1.5		3/4"-16 UNF		M22x1.5		M33x2		M42x2			
Poppet valve pilot operated	Type							**SVSPM33-BA**		**SVSPM42-BA**			
	Data sheet no.							1.11-2076		1.111-2091			
	Type							**SVYPM33-BA**	●				
	Data sheet no.							1.11-2085					
	Cavity							2.13-1005		2.13-1050			
Poppet valve pilot operated	Type							**SVSPM33-AB**		**SVSPM42-AB**			
	Data sheet no.							1.11-2076		1.11-2091			
	Type							**SVYPM33-AB**	●				
	Data sheet no.							1.11-2085					
	Cavity							2.13-1005		2.13-1050			

● Execution Ex d

Solenoid poppet valve cartridge
- **normally closed**
- **Q_{max} = 6 l/min**
- **p_{max} = 350 bar**

NG3



DESCRIPTION

The 2/2-way seating valve in slip-in cartridge form is the central control element of virtually all directly-controlled seating valves in nominal size 3-Mini. The seating valve cartridge, the spring, one O-ring and a washer are supplied separately. A solenoid (VDE standard 0580) is an optional addition.
Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The seating valve piston is held against the spring by the pressure-tight control solenoid. Because the seat-piston design has equal surface areas on both sides and since the seat/piston construction is balanced in terms of pressure, no undesirable closing and opening forces are generated. As a result, oil can flow in both directions through the seating valve. The seat/piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel.
See data sheet register no. 2.13.

TYPE CODE

Poppet valve cartridge: 2 2 03 #
Poppet valve cartridge with solenoid: □ 2 2 03 - [ ] # □

- Medium-solenoid [M] / Super-solenoid [S]
- 2-way (Connections)
- 2 Position
- Nominal size 3
- Nominal voltage U_N: 12 VDC [G12], 24 VDC [G24], 110 VAC [R110], 115 VAC [R115], 230 VAC [R230]
- Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG3
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form 4 solenoid fixing screws M3
Ambient temperature	-20…+50 °C
Mounting position	any
Fastening torque	M_D = 1,2 Nm (quality 8.8)
Weight: 2203	m = 0,015 kg
. 2203- . .	m = 0,225 kg
Volume flow direction	any

HYDRAULIC SPECIFICATIONS

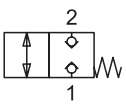
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 125 bar Super: p_{max} = 350 bar
Max. volume flow	Q_{max} = 6 l/min, see characteristics

ELECTRICAL CONTROL

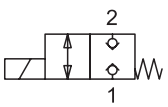
Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal flow	U_N = 12 VDC U_N = 24 VDC U_N = 110 VAC∗ U_N = 115 VAC∗ U_N = 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections/	Over device plug connection to ISO4400/Power supply DIN 43650, (2P+E), other connections on request.
Solenoid:	– Medium SIN29V (data sheet 1.1-80) – Super SIS29V (data sheet 1.1-85)

SYMBOLS

2203

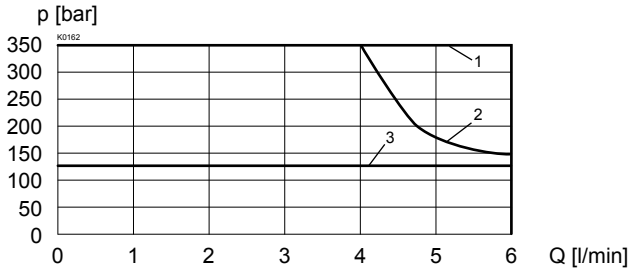


. 2203- . .



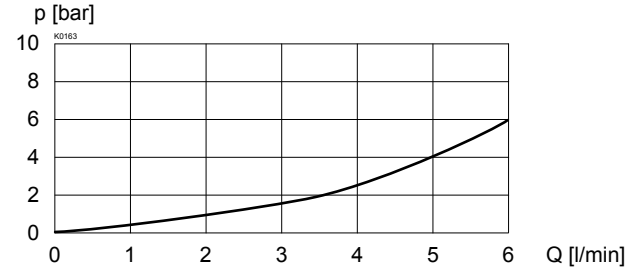
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit at -10%



	Flow direction	
Type	1 → 2	2 → 1
M2203	3	3
S2203	1	2

Δp = f (Q) Pressure loss / flow characteristics



DIMENSIONS

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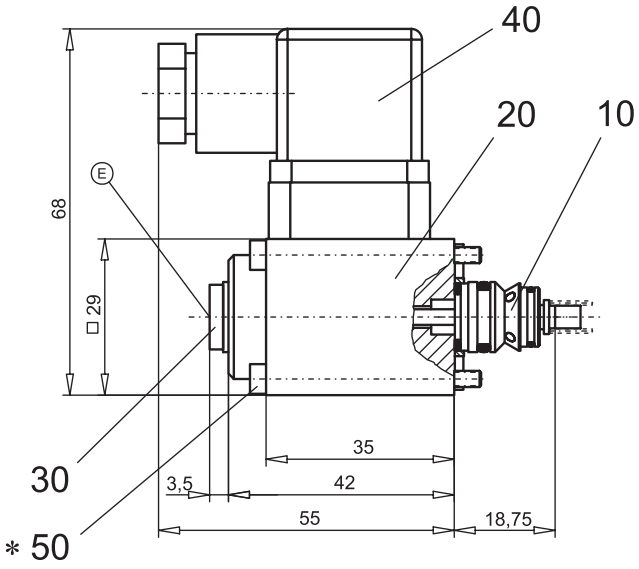
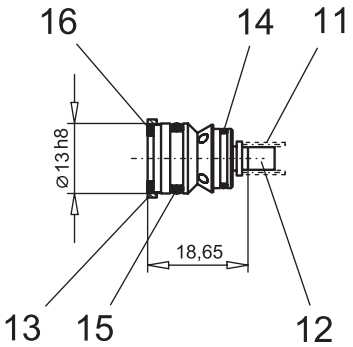
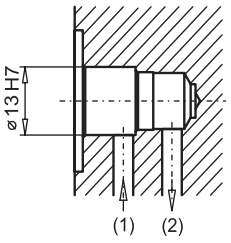


2203





For detailed cavity drawing and cavity tools see data sheet 2.13-1012

PARTS LIST

Position	Article	Description
10	500.0002	Poppet valve cartridge 2203
11	052.1607	Spring 0,8 x 6 x 8
12	222.0097	Pin
13	212.1580	Washer
14	160.2090	O-ring ID 9,00 x 1,00
15	160.2093	O-ring ID 9,25 x 1,78
16	160.1095	O-ring ID 9,50 x 1,6
20	260.2… 260.3…	Medium-solenoid SIN29V Super-solenoid SIS29V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	246.0141	Socket head cap screw M3 x 40 DIN 912

* Cartridge supplied with fastening screw M3 x 40 for steel bodies/ blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

E = air bleed screw

ACCESSORIES

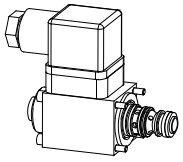
Cartridge built-in flange- or sandwich body:
Flange Register 1.11
Sandwich Register 1.11

Special tool 983.2005 to poppet valve cartridge 2203

Explications techniques voir feuille 1.0-100

Solenoid poppet valve cartridge
- **normally open**
- **Q_{max} = 6 l/min**
- **p_{max} = 350 bar**

NG3



DESCRIPTION

This 2/2-way poppet valve in slip-in cartridge design is mainly used in blocs for hydraulic integrated circuits. Poppet cartridge and spring will be supplied as separate items, if ordered, together with solenoid (VDE standard 0580) and fastening screws.

Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

If energised, the pressure proof solenoid presses the poppet auto the seat, acting against a spring. In deenergised state the poppet is lifted off its seat by the spring. One to the pressure balanced design of the poppet-spool no undesired opening as closing forces arise. As a result, oil can flow in both directions through the seating valve. The seat/piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

TYPE CODE

Poppet valve cartridge			2	2	03	0-S1265		# ☐
Poppet valve cartridge with solenoid	☐		2	2	03	0-S1265 -	☐	# ☐
Medium-solenoid	M							
Super-solenoid	S							
2-way (Connections)								
2 Position								
Nominal size 3								
Normally open								
Nominal voltage U_N		12 VDC	G12		110 VAC	R110		
		24 VDC	G24		115 VAC	R115		
					230 VAC	R230		
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG3
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form 4 solenoid fixing screws M3
Ambient temperature	-20… +50 °C
Mounting position	any
Fastening torque	M_D = 1,2 Nm (quality 8.8)
Weight: 22030-S1265	m = 0,02 kg
. 22030-S1265- . .	m = 0,23 kg
Volume flow direction	any

HYDRAULIC SPECIFICATIONS

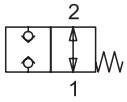
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 125 bar Super: p_{max} = 350 bar
Max. volume flow	Q_{max} = 6 l/min, see characteristics

ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal flow	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections / Power supply	Over device plug connection to ISO 4400 / DIN 43650, (2P+E), other connections on request
Solenoid:	– Medium SIN29V (data sheet 1.1-80) – Super SIS29V (data sheet 1.1-85)

SYMBOLS

22030-S1265



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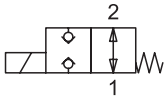
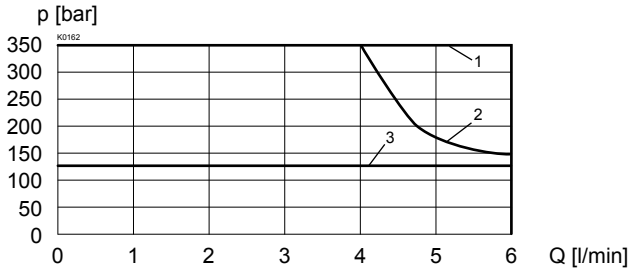


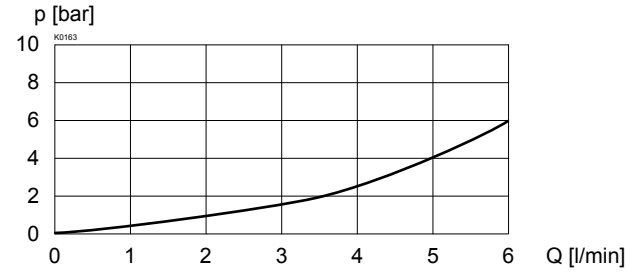
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit at -10%



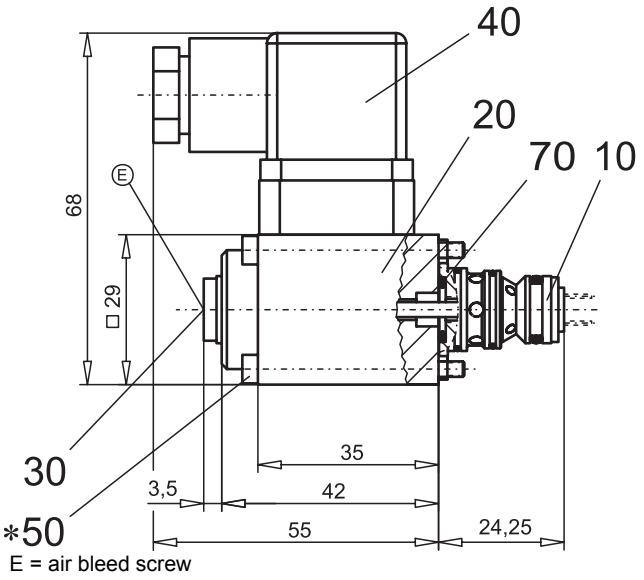
	Flow direction	
Type	1 → 2	2 → 1
M22030-S1265	3	3
S22030-S1265	1	2

Δp = f (Q) Pressure loss / flow characteristics



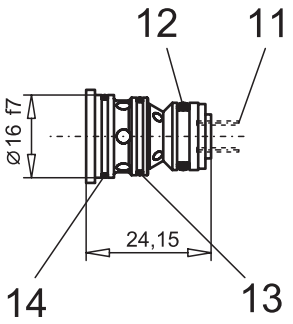
DIMENSIONS

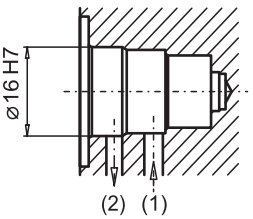
. 22030-S1265- . .



E = air bleed screw

22030-S1265





For detailed cavity drawing and cavity tools see data sheet 2.13-1016

PARTS LIST

Position	Article	Description
10	500.0001	Poppet valve cartridge 22030-S1265
11	052.1607	Spring 0,8 x 6 x 8
12	160.2093	O-ring ID 9,25 x 1,78
13	160.1131	O-ring ID 13,00 x 1,00
14	160.1142	O-ring ID 14,00 x 1,00
20	260.2…	Medium-solenoid SIN29V
	260.3…	Super-solenoid SIS29V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	246.0141	Socket head cap screw M3 x 40 DIN 912
70	160.1095	O-ring ID 9,50 x 1,6

* Cartridge supplied with fastening screw M3 x 40 for steel bodies/ blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

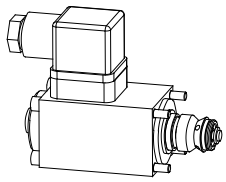
Cartridge built-in sandwich body:
Sandwich Register 1.11

Special tool 983.2007 to poppet valve cartridge 22030-S1265

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
- **normally closed**
- **Q_{max} = 15 l/min**
- **p_{max} = 350 bar**

NG4



DESCRIPTION
The 2/2-way seating valve in slip-in cartridge form is the central control element of virtually all directly-controlled seating valves in nominal size 4-Mini. The poppet valve cartridge, the stroke limiting piston and the spring are supplied separately. A solenoid (VDE standard 0580) is an optional addition.
Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION
The poppet valve piston is held against the spring by the pressure-tight control solenoid. Because the seat-piston design has equal surface areas on both sides and since the seat/piston construction is balanced in terms of pressure, no undesirable closing and opening forces are generated. As a result, oil can flow in both directions through the seating valve. The seat/piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

TYPE CODE

Poppet valve cartridge						2	2	04K		# ☐
Poppet valve cartridge with solenoid		☐		2	2	04	-	☐		# ☐
Medium-solenoid	M									
Super-solenoid	S									
2-way (Connections)										
2 Position										
Nominal size 4										
Nominal voltage U_N	12 VDC	G12	110 VAC	R110						
	24 VDC	G24	115 VAC	R115						
			230 VAC	R230						
Design-Index (Subject to change)										

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG4
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form 4 solenoid fixing screws M4
Ambient temperature	-20…+50°C
Mounting positions	any
Fastening torque	M_D = 2,6 Nm (quality 8.8)
Weight: 2204K	m = 0,035 kg
. 2204- . .	m = 0,5 kg
Volume flow direction	any

HYDRAULIC SPECIFICATIONS

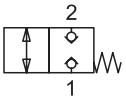
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70°C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar
Max. volume flow	Q_{max} = 15 l/min, see characteristics

ELECTRICAL CONTROL

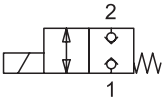
Construction tight	Solenoid, wet pin push type, pressure
Standard-nominal flow	U_N = 12 VDC U_N = 24 VDC U_N = 110 VAC∗ U_N = 115 VAC∗ U_N = 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15'000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections/ Power supply	Over device plug connection to ISO 4400/DIN 43 650, (2P+E), other connections on request
Solenoid:	- Medium SIN35V (data sheet 1.1-105) - Super SIS35V (data sheet 1.1-110)

SYMBOLS

2204K

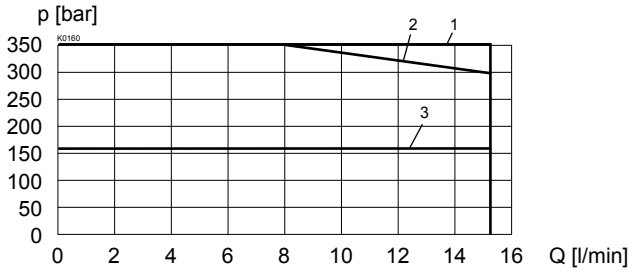


. 2204- . .



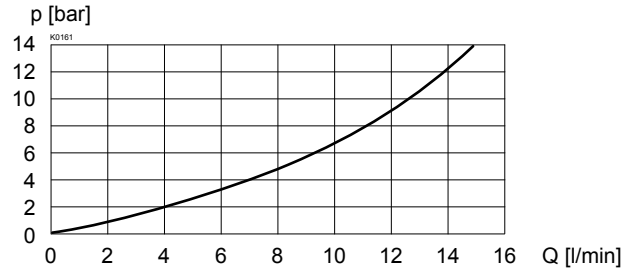
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit at -10%



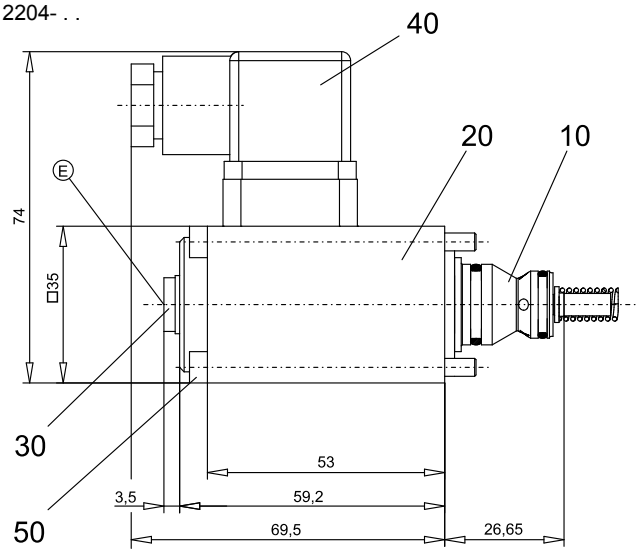
	Flow direction	
Type	1 → 2	2 → 1
M2204	3	3
S2204	1	2

Δp = f (Q) Pressure loss / flow characteristics



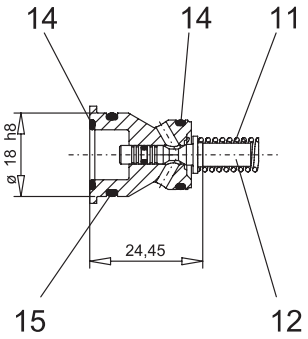
DIMENSIONS

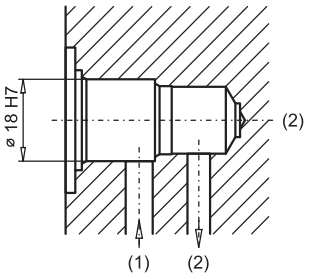
. 2204- . .



E = air bleed screw

2204K





For detailed cavity drawing and cavity tools see data sheet 2.13-1013

PARTS LIST

Position	Article	Description
10	500.9111	Poppet valve cartridge 2204K
11	053.2101	Spring 1x7,4x16,5
12	222.0056	Pin
14	160.2121	O-ring ID 12,00x1,5
15	160.2140	O-ring ID 14,00x1,78
20	260.4…	Medium-solenoid SIN35V
	260.5…	Super-solenoid SIS35V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	246.1161	Socket head cap screw M4x60 DIN 912

* Cartridge supplied with fastening screw M4x60 for steel bodies/ blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

Cartridge built-in flange- or sandwich body:

Flange Register 1.11

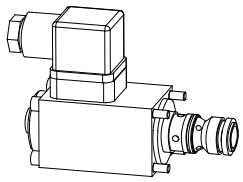
Sandwich Register 1.11

Special tool 983.2000 to poppet valve cartridge 2204K

Technical explanation see data sheet 1.0-100E

Solenoid poppet valve cartridge
- **normally open**
- **Q_{max} = 15 l/min**
- **p_{max} = 250 bar**

NG4



DESCRIPTION

This 2/2-way poppet valve in slip-in cartridge design is mainly used in blocs for hydraulic integrated circuits. Poppet cartridge and spring will be supplied as separate items, if ordered, together with solenoid (VDE standard 0580) and fastening screws.

Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

If energised, the pressure proof solenoid presses the poppet auto the seat, acting against a spring. In deenergised state the poppet is lifted off its seat by the spring. One to the pressure balanced design of the poppet-spool no undesired opening as closing forces arise. As a result, oil can flow in both directions through the seating valve. The seat/piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

TYPE CODE

Poppet valve cartridge					2	2	04	0-S1265 # ☐
Poppet valve cartridge with solenoid	☐				2	2	04	0-S1265 - ☐ # ☐
Medium-solenoid	M							
Super-solenoid	S							
2-way (Connections)								
2 Position								
Nominal size 4								
Normally open								
Nominal voltage U_N		12 VDC	G12	110 VAC	R110			
		24 VDC	G24	115 VAC	R115			
				230 VAC	R230			
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG4
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form 4 solenoid fixing screws M4
Ambient temperature	-20…+50 °C
Mounting position	any
Fastening torque	M_D = 2,6 Nm (quality 8.8)
Weight: 22040-S1265	m = 0,045 kg
. 22040-S1265- . .	m = 0,5 kg
Volume flow direction	any

HYDRAULIC SPECIFICATIONS

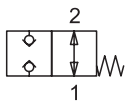
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 250 bar
Max. volume flow	Q_{max} = 15 l/min, see characteristics

ELECTRICAL CONTROL

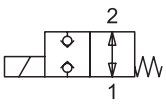
Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal flow	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections / Power supply	Over device plug connection to ISO 4400 / DIN 43 650, (2P+E), other connections on request
Solenoid:	– Medium SIN35V (data sheet 1.1-105) – Super SIS35V (data sheet 1.1-110)

SYMBOLS

22040-S1265

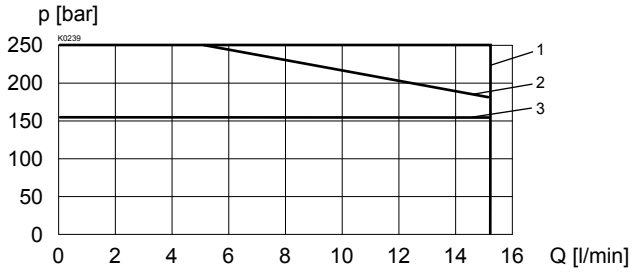


. 22040-S1265- . .



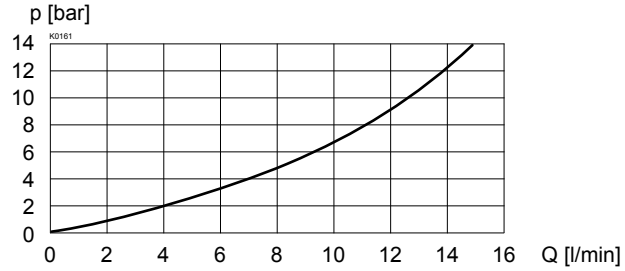
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit at -10%



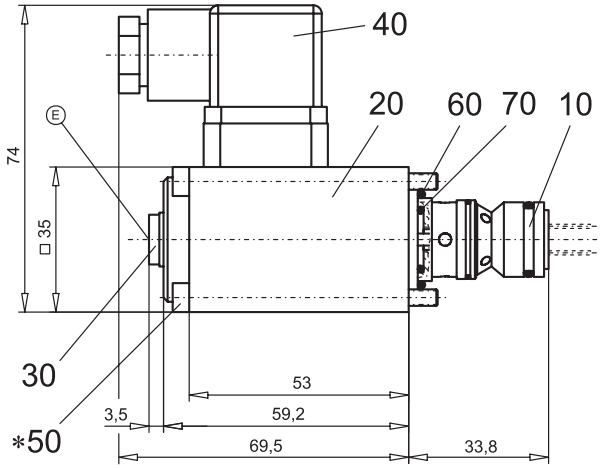
	Flow direction	
Type	1 → 2	2 → 1
M22040-S1265	3	3
S22040-S1265	1	2

Δp = f (Q) Pressure loss / flow characteristics

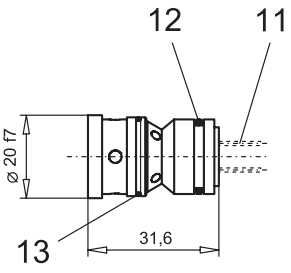


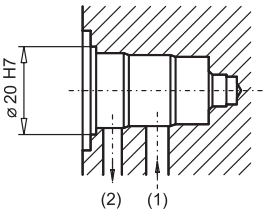
DIMENSIONS

. 22040-S1265- . .



22040-S1265





For detailed cavity drawing and cavity tools see data sheet 2.13-1017

E = air bleed screw

PARTS LIST

Position	Article	Description
10	500.1005	Poppet valve cart. 22040-S1265 Medium
	500.1006	Poppet valve cart. 22040-S1265 Super
11	053.2101	Spring 1 x 7,4 x 16,5 Medium
	053.2107	Spring 1 x 7,4 x 19,25 Super
12	160.2140	O-ring ID 14,00 x 1,78
13	160.1161	O-ring ID 16,00 x 1,00
20	260.4…	Medium-solenoid SIN35V
	260.5…	Super-solenoid SIS35V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	246.1161	Socket head cap screw M4 x 60 DIN 912
60	160.2204	O-ring ID 20,35 x 1,78
70	160.2120	O-ring ID 12,42 x 1,78

* Cartridge supplied with fastening screw M4 x 60 for steel bodies/ blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

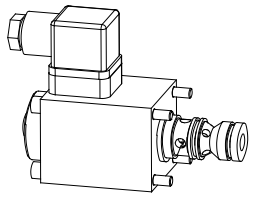
Cartridge built-in sandwich body:
Sandwich Register 1.11

Special tool 983.2006 to poppet valve cartridge 22040-S1265

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
- **normally closed**
- **Q_{max} = 40 l/min**
- **p_{max} = 350 bar**

NG6



DESCRIPTION
The 2/2-way seating valve in slip-in cartridge form is the central control element of virtually all directly-controlled seating valves in nominal size 6. The seating valve cartidge, the stroke limiting piston, the spring, one O-ring and a washer are supplied separately. A solenoid (VDE standard 0580) is an optional addition.
Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION
The seating valve piston is held against the spring by the pressure-tight control solenoid. Because the seat-piston design has equal surface areas on both sides and since the seat / piston construction is balanced in terms of pressure, no undesirable closing and opening forces are generated. As a result, oil can flow in both directions through the seating valve. The seat / piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

TYPE CODE

Poppet valve cartridge					2 2 06			# ☐
Poppet valve cartridge with solenoid	☐				2 2 06	-	☐	# ☐
Medium-solenoid	M							
Super-solenoid	S							
2-way (Connections)								
2 Positions								
Nominal size 6								
Nominal voltage U_N		12 VDC	G12	110 VAC	R110			
		24 VDC	G24	115 VAC	R115			
				230 VAC	R230			
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve cartridge
Nominal size	NG6
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartrigde form 4 solenoid fixing screws M5
Ambient temperature	-20…+50 °C
Mounting position	any
Fastening torque	M_D = 5,2 Nm (quality 8.8)
Weight: 2206	m = 0,04 kg
. 2206- . .	m = 0,8 kg
Volume flow direction	any

HYDRAULIC SPECIFICATIONS

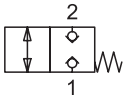
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar
Max. volume flow	Q_{max} = 40 l/min, see characteristics

ELECTRICAL CONTROL

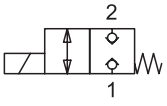
Construction	Solenoid, wet pin push, pressure tight
Standard-nominal flow	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections / Power supply	Over device plug connection to ISO 4400 / DIN 43650, (2P+E), other connections on request
Solenoid:	– Medium SIN45V (1.1-120) – Super SIS45V (1.1-125)

SYMBOLS

2206

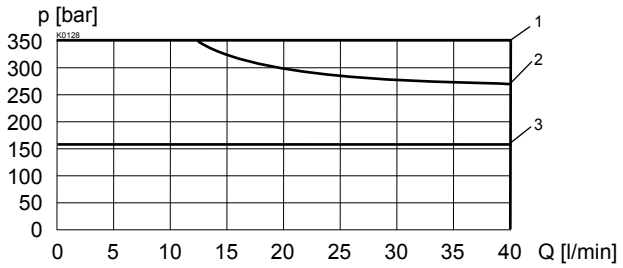


. 2206- . .



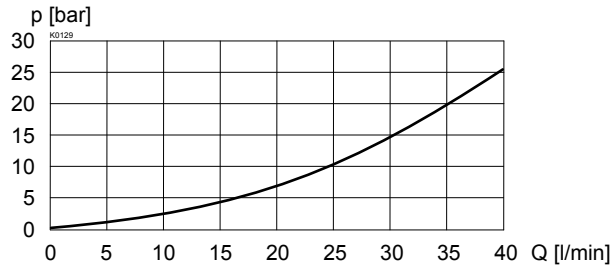
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit at -10%

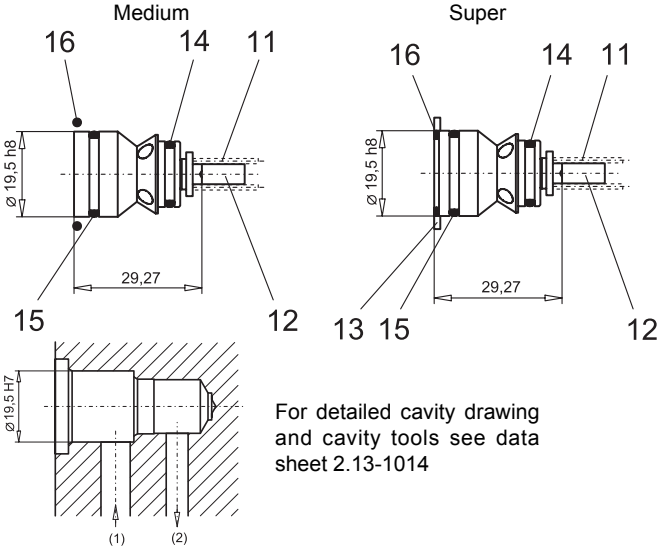


	Flow directions	
Type	1 → 2	2 → 1
M2206	3	3
S2206	1	2

Δp = f (Q) Pressure loss / flow characteristics



DIMENSIONS

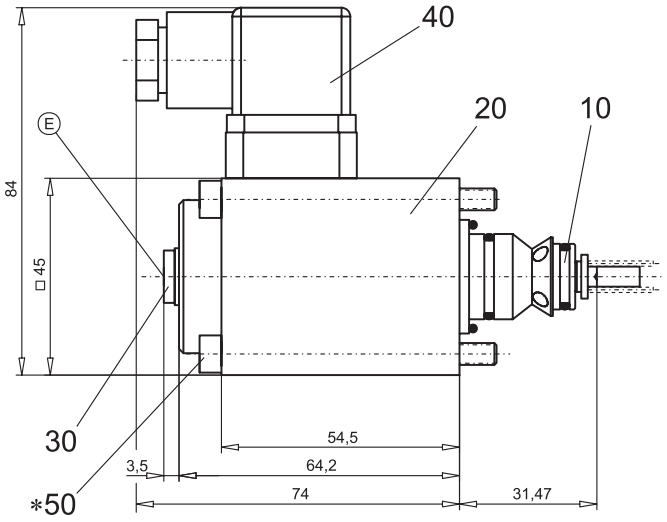


For detailed cavity drawing and cavity tools see data sheet 2.13-1014

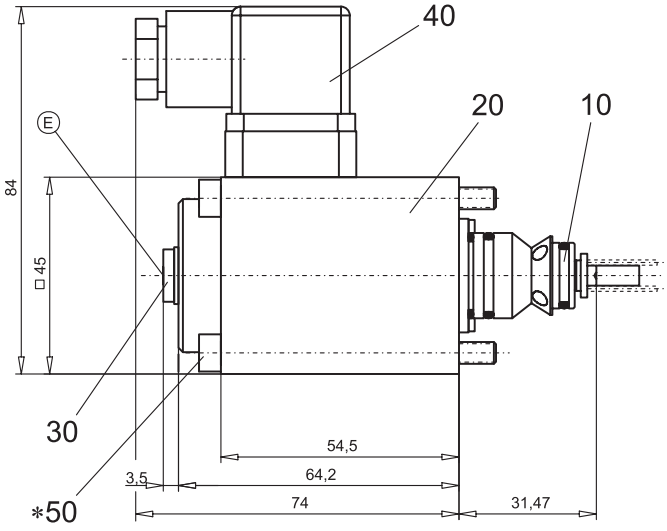
PARTS LIST

Position	Article	Description
10	500.3000	Poppet valve cartridge 2206 Medium
	500.3013	Poppet valve cartridge 2206 Super
11	053.2600	Spring 1,2x7,2x15 Medium
	052.2605	Spring 1,2x7,2x16 Super
12	222.0041	Pin
13	212.0502	Washer (only for Super)
14	160.2108	O-ring ID 10,82x1,78
15	160.2156	O-ring ID 15,60x1,78
16	160.2236	O-ring ID 23,52x1,78 Medium
	160.2161	O-ring ID 16,00x1,5 Super
20	260.6 . . .	Medium-solenoid SIN45V
	260.7 . . .	Super-solenoid SIS45V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	249.2001	Socket head cap screw M5x63

Medium



Super



E = air bleed screw

* Cartridge supplied with fastening screw M5x63 for steel bodies/blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

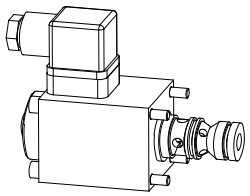
Cartridge built in flange- or sandwich body:
Flange Register 1.11
Sandwich Register 1.11

Special tool 983.2001 to poppet valve cartridge 2206.

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
- **normally open**
- **Q_{max} = 40 l/min**
- **p_{max} = 315 bar**

NG6



DESCRIPTION

This 2/2-way poppet valve in slip-in cartridge design is mainly used in blocs for hydraulic integrated circuits. Poppet cartridge and spring will be supplied as separate items, if ordered, together with solenoid (VDE standard 0580) and fastening screws.

Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

If energised, the pressure proof solenoid presses the poppet auto the seat, acting against a spring. In deenergised state the poppet is lifted off its seat by the spring. One to the pressure balanced design of the poppet-spool no undesired opening as closing forces arise. As a result, oil can flow in both directions through the seating valve. The seat / piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

TYPE CODE

Poppet valve cartridge				2	2	06	0-S1265	# ☐
Poppet valve cartridge with solenoid	☐			2	2	06	0-S1265 - ☐	# ☐
Medium-solenoid	M							
Super-solenoid	S							
2-way (Connections)								
2 Position								
Nominal size 6								
Normally open								
Nominal voltage U_N		12 VDC	G12		110 VAC	R110		
		24 VDC	G24		115 VAC	R115		
					230 VAC	R230		
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG6
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form 4 solenoid fixing screws M5
Ambient temperature	-20…+50 °C
Mounting position	any
Fastening torque	M_D = 5,2 Nm (quality 8.8)
Weight: 22060-S1265	m = 0,06 kg
. 22060-S1265- . .	m = 0,8 kg
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

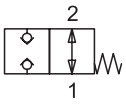
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 315 bar
Max. volume flow	Q_{max} = 40 l/min, see characteristics

ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal flow	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections/Power supply	Over device plug connection to ISO 4400 / DIN 43650, (2P+E), other connections on request
Solenoid:	– Medium SIN45V (1.1-120) – Super SIS45V (1.1-125)

SYMBOLS

22060-S1265



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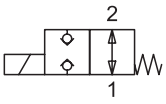
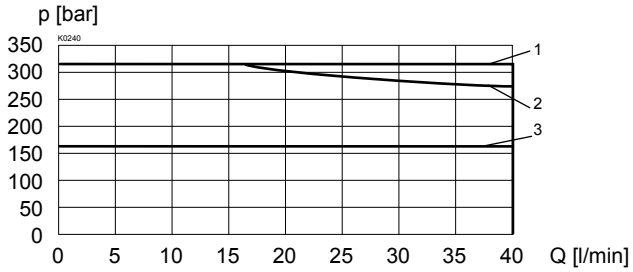


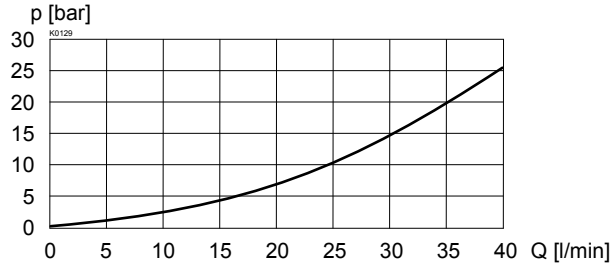
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit at -10%



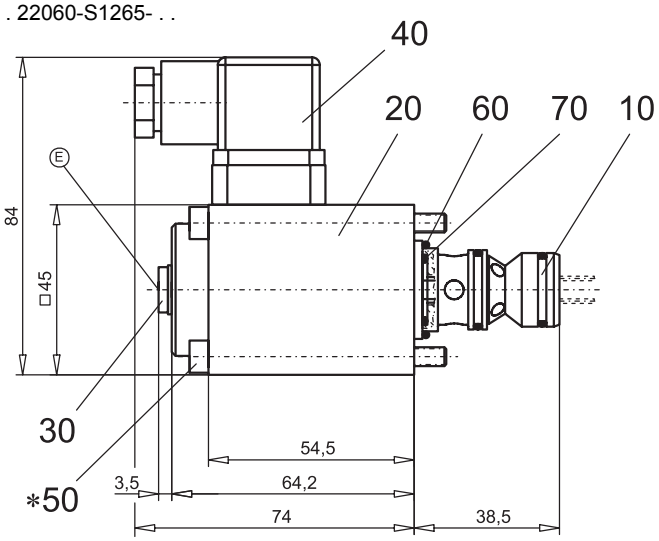
	Flow direction	
Type	1 → 2	2 → 1
M22060-S1265	3	3
S22060-S1265	1	2

Δp = f (Q) Pressure loss / flow characteristics



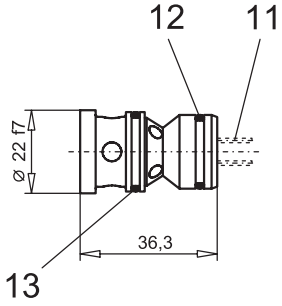
DIMENSIONS

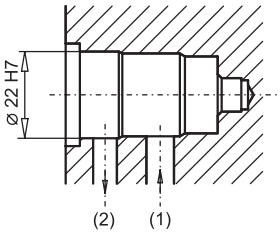
. 22060-S1265- . .



E = air bleed screw

22060-S1265





For detailed cavity drawing and cavity tools see data sheet 2.13-1018

PARTS LIST

Position	Article	Description
10	500.3002	Poppet valve cart. 22060-S1265 Medium
	500.3017	Poppet valve cart. 22060-S1265 Super
11	053.2600	Spring 1,2 x 7,2 x 15 Medium
	052.2605	Spring 1,2 x 7,2 x 16 Super
12	160.2156	O-ring ID 15,60 x 1,78
13	160.2170	O-ring ID 17,17x1,78
20	260.6…	Medium-solenoid SIN45V
	260.7…	Super-solenoid SIS45V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	249.2001	Socket head cap screw M5 x 63
60	160.2236	O-ring ID 23,52 x 1,78
70	160.2156	O-ring ID 15,60 x 1,78

* Cartridge supplied with fastening screw M5 x 63 for steel bodies/ blocs. For aluminium bodies/blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

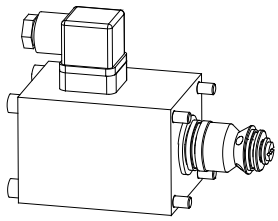
Cartridge built-in sandwich body:
Sandwich Register 1.11

Special tool 983.2003 to poppet valve cartridge 22060-S1265

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
- **normally closed**
- **Q_{max} = 80 l/min**
- **p_{max} = 350 bar**

NG10



DESCRIPTION

The 2/2-way seating valve in slip-in cartridge form is the central control element of virtually all directly-controlled seating valves in nominal size 10. The seating valve cartidge, the stroke limiting piston, the spring, one O-ring and a washer are supplied separately. A solenoid (VDE standard 0580) is an optional addition.
Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The seating valve piston is held against the spring by the pressure-tight control solenoid. Because the seat-piston design has equal surface areas on both sides and since the seat / piston construction is balanced in terms of pressure, no undesirable closing and opening forces are generated. As a result, oil can flow in both directions through the seating valve. The seat / piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

TYPE CODE

Poppet valve cartridge						2	2	10		# ☐
Poppet valve cartridge with solenoid	☐					2	2	10	- ☐	# ☐
Medium-solenoid	M									
Super-solenoid	S									
2-way (Connections)										
2 Position										
Nominal size 10										
Nominal voltage U_N		12 VDC	G12		110 VAC	R110				
		24 VDC	G24		115 VAC	R115				
					230 VAC	R230				
Design-Index (Subject to change)										

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve cartridge
Nominal size	NG10
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form 4 solenoid fixing screws M6
Ambient temperature	-20…+50 °C
Mounting position	any
Fastening torque	M_D = 8,9 Nm (quality 8.8)
Weight: 2210	m = 0,12 kg
. 2210- . .	m = 1,98 kg
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

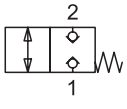
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar
Max. volume flow	Q_{max} = 80 l/min, see characteristics

ELECTRICAL CONTROL

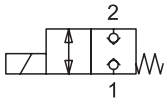
Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal flow	U_N = 12 VDC, U_N = 24 VDC U_N = 110 VAC∗, U_N = 115 VAC∗ U_N = 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections / Power supply	Overdevice plug connection to ISO4400 / DIN 43650, (2P+E), other connections on request
Solenoid:	– Medium SIN60V (data sheet 1.1-145) – Super SIS60V (data sheet 1.1-150)

SYMBOLS

2210

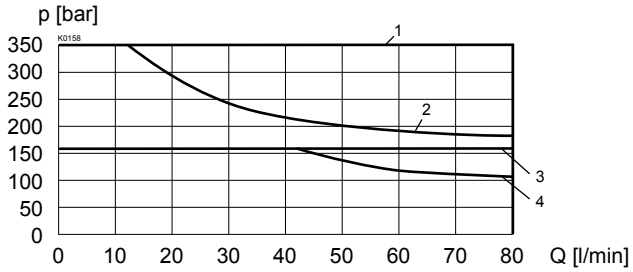


. 2210- . .



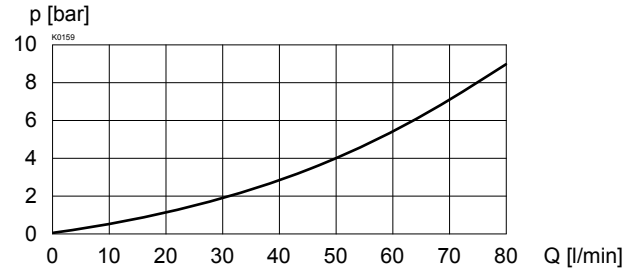
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit at -10%



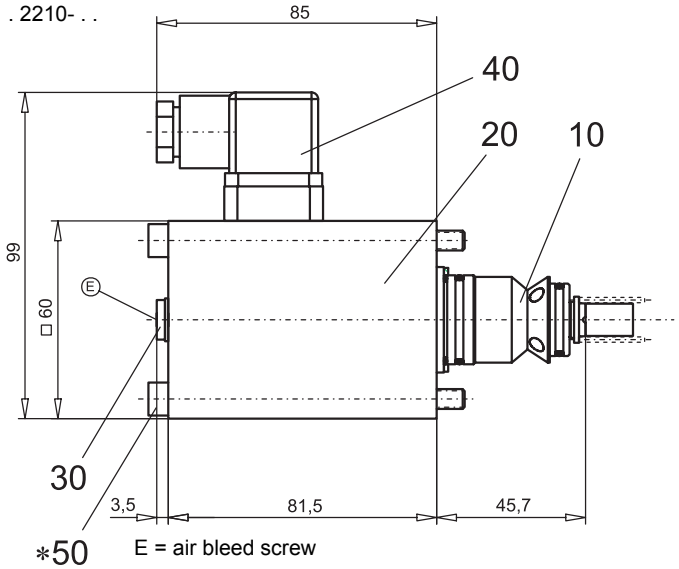
	Flow direction	
Type	1 → 2	2 → 1
M2210	3	4
S2210	1	2

Δp = f (Q) Pressure loss / flow characteristics



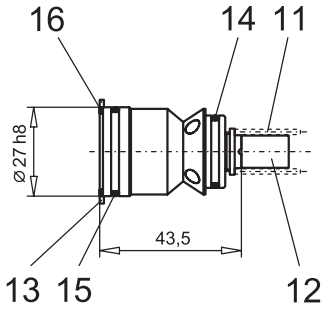
DIMENSIONS

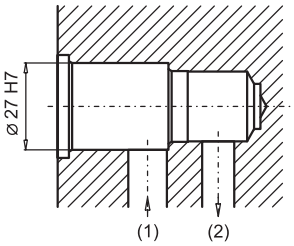
. 2210- . .



E = air bleed screw

2210





For detailed cavity drawing and cavity tools see data sheet 2.13-1015

PARTS LIST

Position	Article	Description
10	500.4010	Poppet valve cartridge 2210
11	052.4202	Spring 1,6 x 13,6 x 26
12	222.0042	Pin
13	212.0504	Washer
14	160.2188	O-ring ID 18,77 x 1,78
15	160.2236	O-ring ID 23,52 x 1,78
16	160.2230	O-ring ID 23,00 x 1,5
20	260.8… 260.9…	Medium-solenoid SIN60V Super-solenoid SIS60V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	246.3190	Socket head cap screw M6 x 90 DIN 912

* Cartridge supplied with fastening screw M6 x 90 for steel bodies / blocs. For aluminium bodies / blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

Cartridge built-in flange- or sandwich body:

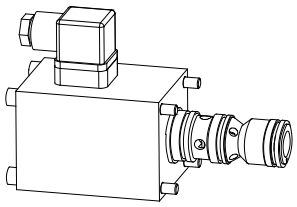
Flange	Register 1.11
Sandwich	Register 1.11

Special tool 983.2002 to poppet valve cartridge 2210.

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
- **normally open**
- **Q_{max} = 80 l/min**
- **p_{max} = 350 bar**

NG10



DESCRIPTION

This 2/2-way poppet valve in slip-in cartridge design is mainly used in blocs for hydraulic integrated circuits. Poppet cartridge and spring will be supplied as separate items, if ordered, together with solenoid (VDE standard 0580) and fastening screws.

Important: at the time the valve is taken into service, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

If energised, the pressure proof solenoid presses the poppet auto the seat, acting against a spring. In deenergised state the poppet is lifted off its seat by the spring. One to the pressure balanced design of the poppet-spool no undesired opening as closing forces arise. As a result, oil can flow in both directions through the seating valve. The seat / piston guide is sealed with an O-ring. The seat with a metallic seal closes off the valve so that there is no leakage oil.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. Cavity tools are available for hire or sale for machining aluminium or steel. See data sheet register no. 2.13.

TYPE CODE

Poppet valve cartridge					2	2	10	0-S1265	# ☐
Poppet valve cartridge with solenoid	☐				2	2	10	0-S1265 - ☐	# ☐
Medium-solenoid	M								
Super-solenoid	S								
2-way (Connections)									
2 Position									
Nominal size 10									
Normally open									
Nominal voltage U_N		12 VDC	G12	110 VAC	R110				
		24 VDC	G24	115 VAC	R115				
				230 VAC	R230				
Design-Index (Subject to change)									

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG10
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	cartridge form 4 solenoid fixing screws M6
Ambient temperature	-20…+50 °C
Mounting position	any
Fastening torque	M_D = 8,9 Nm (quality 8.8)
Weight: 22100-S1265	m = 0,21 kg
. 22100-S1265- . .	m = 2,07 kg
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

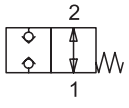
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar
Max. volume flow	Q_{max} = 80 l/min, see characteristics

ELECTRICAL CONTROL

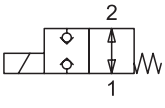
Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal flow	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections / Power supply	Over device plug connection to ISO 4400 / DIN 43650, (2P+E), other connections on request
Solenoid:	– Medium SIN60V (Data sheet 1.1-145) – Super SIS60V (Data sheet 1.1-150)

SYMBOLS

22100-S1265

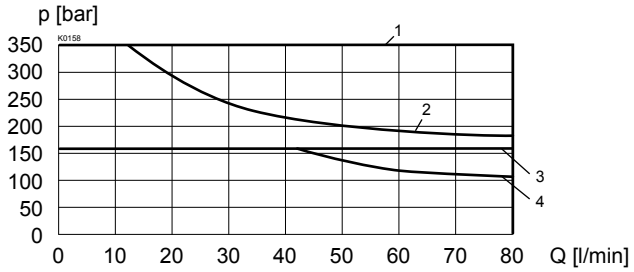


. 22100-S1265- . .



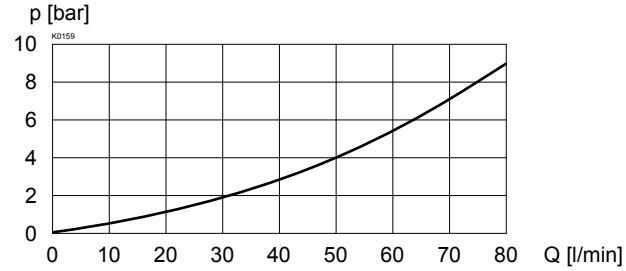
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit at -10%



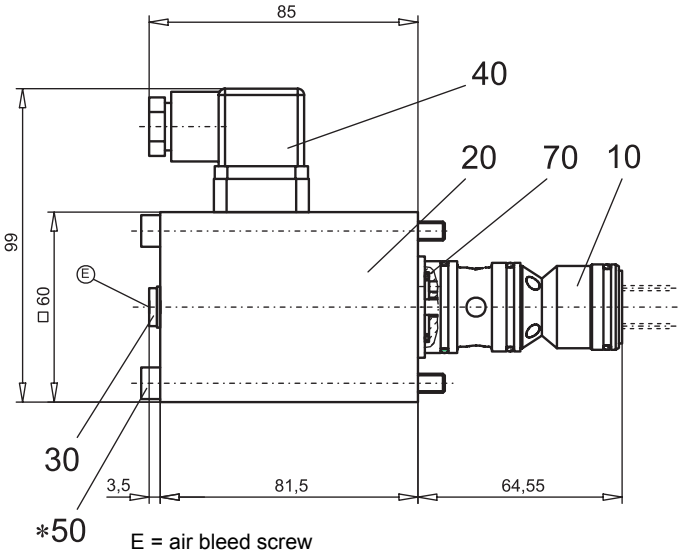
	Flow direction	
Type	1 → 2	2 → 1
M22100-S1265	3	4
S22100-S1265	1	2

Δp = f (Q) Pressure loss / flow characteristics



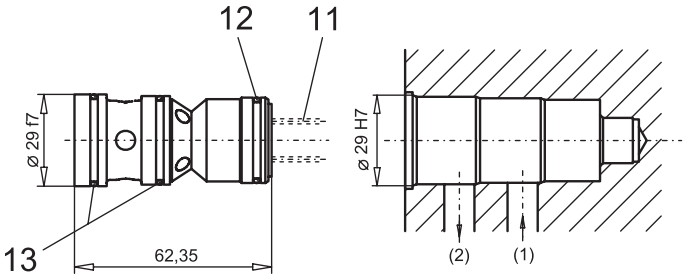
DIMENSIONS

. 22100-S1265- . .



E = air bleed screw

22100-S1265



For detailed cavity drawing and cavity tools see data sheet 2.13-1019

PARTS LIST

Position	Article	Description
10	500.4003	Poppet valve cart. 22100-S1265
11	052.4202	Spring 1,6 x 13,6 x 26
12	160.2236	O-ring ID 23,52 x 1,78
13	160.2252	O-ring ID 25,12 x 1,78
20	260.8…	Medium-solenoid SIN60V
	260.9…	Super-solenoid SIS60V
30	239.2033	Plug (incl. seal) HB0
40	219.2002	Plug
50	246.3190	Socket head cap screw M6 x 90 DIN 912
70	160.2188	O-ring ID 18,77 x 1,78

* Cartridge supplied with fastening screw M6 x 90 for steel bodies / blocs. For aluminium bodies / blocs longer screws are recommended (min. 2 screw diameter).

ACCESSORIES

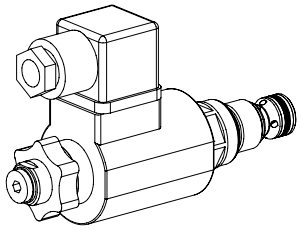
Cartridge built-in sandwich body:
Sandwich Register 1.11

Special tool 983.2004 to poppet valve cartridge 22100-S1265

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
2/2- and 3/2-way version
- **Direct operated**
- **Q_{max} = 20 l/min**
- **p_{max} = 350 bar**

M18x1,5
ISO 7789



DESCRIPTION
Direct operated 2/2- and 3/2-way poppet valve in screw-in cartridge with thread M18 x 1,5 for cavity to ISO 7789, (3/2-way type to Wandfluh standard). The 2/2-way type can be supplied in a „normally closed“ and „normally open“ version. There are two versions of the slip-on coil. The coil type „M“ with steel housing and the more economical type „K“ with plastic moulded coil with the same performance as the steel type. The coil may be exchanged without opening the hydraulic circuit. The outside of the armature tube and the valve body are zinc coated for surface protection.

FUNCTION
The pressure tight switching solenoid and in turn the spring on the opposite side shift the guided poppet into an either open or closed position. Due to the equal-area- and balanced-poppet-design there are no undesired opening or closing forces. Fluid may pass the poppet valve in both directions. The poppet piston is sealed by an o-ring. The seat with metallic seal closes leak free in both directions.

APPLICATION
Wandfluh solenoid operated poppet valves are applied where an absolutly leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks. To machine the cavities in steel or aluminium blocks cavity tools may be supplied (hire or purchase). Please refer to the data sheets in register 2.13

TYPE CODE

S D S PM18 - [ ] - [ ] / [ ] [ ] 35 # [ ]

Poppet valve				
Direct operated				
Super-solenoid				
Screw-in cartridge M18x1,5				
2/2-way, „normally closed“		BA		
2/2-way, „normally open“		AB		
3/2-way		FG		
Nominal voltage U_N	12 VDC	G12	110 VAC	R110
	24 VDC	G24	115 VAC	R115
			230 VAC	R230
Slip-on coil	Plastic housing	K	(only for 12 VDC and 24 VDC available)	
	Metal housing round	M		
Electric connection				
Connector socket EN 175301-803 / ISO 4400		D		
Connector socket AMP Junior-Timer		J		
Coil version				
Design-Index (Subject to change)				

GENERAL SPECIFICATIONS

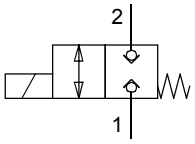
Description	Direct operated 2/2- and 3/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity to ISO 7789 (3/2-way type to Wandfluh standard)
Operation	Solenoid with exchangable slip-on coil
Mounting	Screw-in thread M18 x 1,5
Ambient temperature	-20...+50 °C
Mounting position	any
Fastening torque	M_D = 30 Nm for cartridge $M_{D\,max}$ = 5 Nm or coil retaining nut
Masse	m = 0,43 kg version with plastic coil m = 0,57 kg version with steel coil
Volume flow	any (note performance limits)

HYDRAULIC SPECIFICATIONS

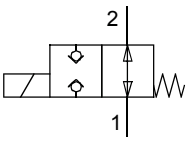
Fluid	Mineral oil, other fluid on request
Contamination	ISO 4406:1999, classe 20/18/14
efficiency	(Required filtration grade ß10…16≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 350 bar
Nominal flow	Q_N =15 l/min
Max. volume flow	Q_{max} = up to 20 l/min
Pressure drop	Δp = < 16 bar with 15 l/min

SYMBOLS

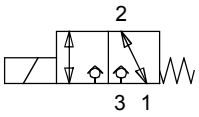
SDSPM18-BA…



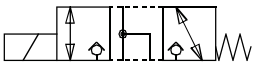
SDSPM18-AB…



SDSPM18-FG…



Transitional function „FG“

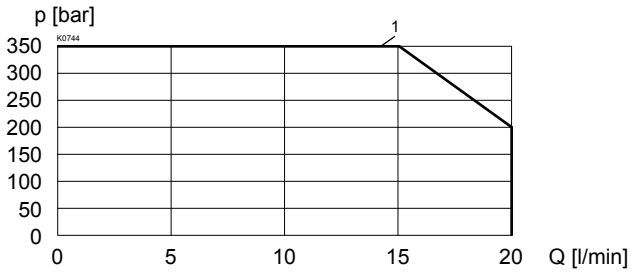


ELECTRICAL CONTROL

Construction	solenoid, wet pin, push type, pressure tight with exchangable slip-on coil
Standard nominal voltage:	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 up to 60 Hz ∗ Rectifier integrated in connector socket Other nominal voltages and wattages on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 acc. to EN 60529 (if correctly mounted)
Relative duty cycle	100% DF (see data sheet 1.1-430)
Switching cycles	5000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections / Power supply	Versions see type code
Solenoid type:	
– Steel coil (M.35/16)	data sheet 1.1-170
– Plastic coil (K.35/16)	data sheet 1.1-172

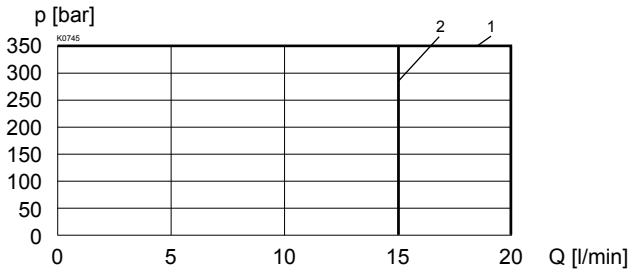
CHARACTERISTICS oil viscosity υ = 30 mm²/s

p = f (Q) Performance limits
at 10% under voltage
2/2-way type, „normally closed“ [BA]



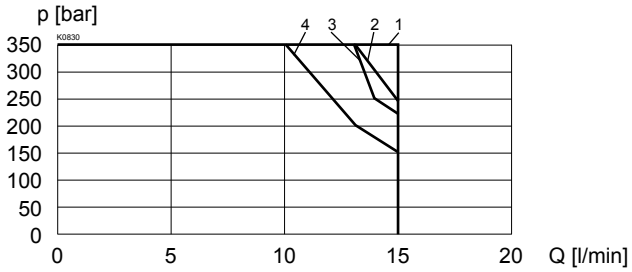
	Flow direction	
Version	1 → 2	2 → 1
SDSPM18-BA-…/„**M**“	1	1
SDSPM18-BA-…/„**K**“	1	1

p = f (Q) Performance limits
at 10% under voltage
2/2-way type, „normally open“ [AB]



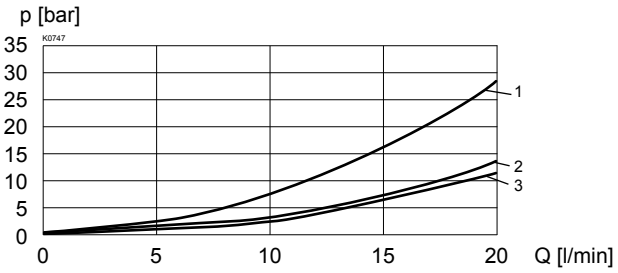
	Flow direction	
Version	1 → 2	2 → 1
SDSPM18-AB-…/„**M**“	2	1
SDSPM18-AB-…/„**K**“	2	1

p = f (Q) Performance limits
at 10% under voltage
3/2-way type [FG]



	Flow direction			
Version	1 → 2	2 → 1	2 → 3	3 → 2
SDSPM18-FG-…/„**M**“	3	1	1	2
SDSPM18-FG-…/„**K**“	3	1	1	4

Δp = f (Q) Pressure volume flow characteristics

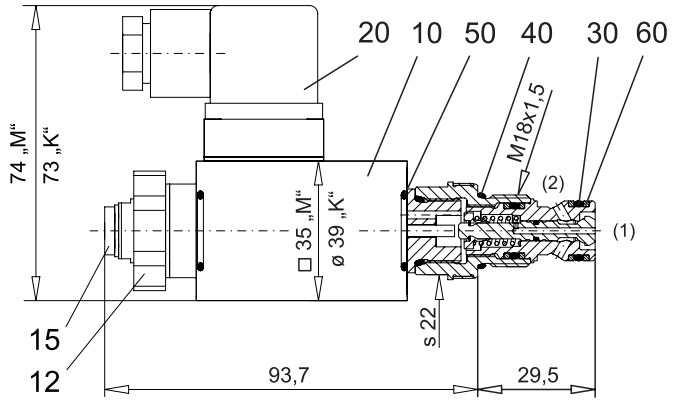


	Flow direction		
Version	1 → 2	2 → 1	3 → 2
SDSPM18-BA-…	2	2	–
SDSPM18-AB-…	2	2	–
SDSPM18-FG-…	3	3	1

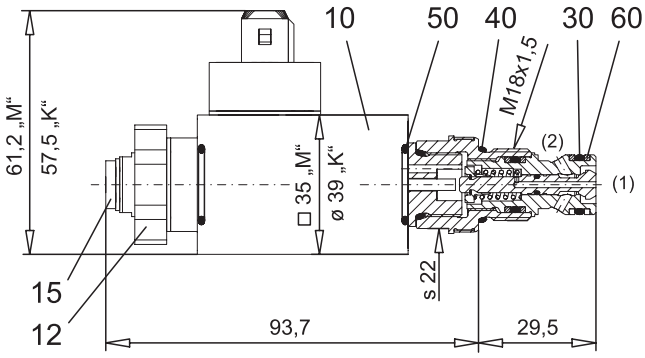
REMARK!
Depending on application the volume flow may be increased but during shifting the total volume flow (3 → 2 and 2 → 1) must not be higher than Q = 20 l/min

DIMENSIONS / SECTIONAL DRAWING

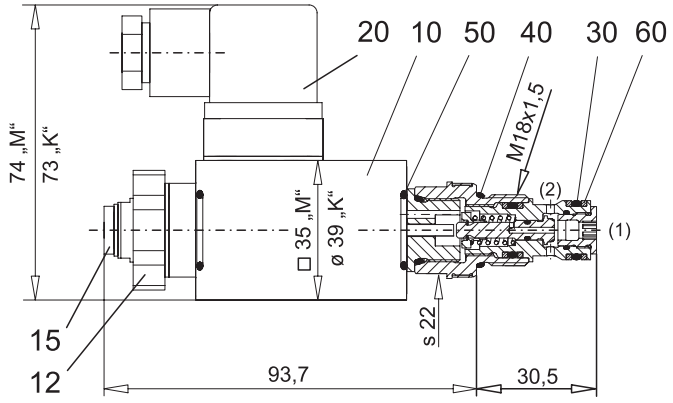
2/2-way version, „normally closed“ [BA]
with DIN connector socket



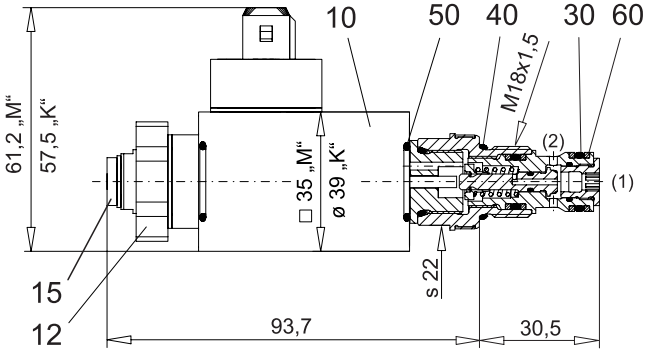
2/2-way version, „normally closed“ [BA]
with Junior-Timer connector socket



2/2-way version „normally open“ [AB]
with DIN connector socket

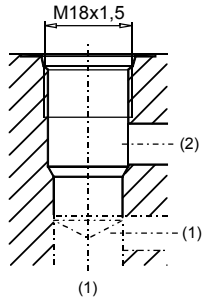


2/2-way version, „normally open“ [AB]
with Junior-Timer connector socket



CAVITY

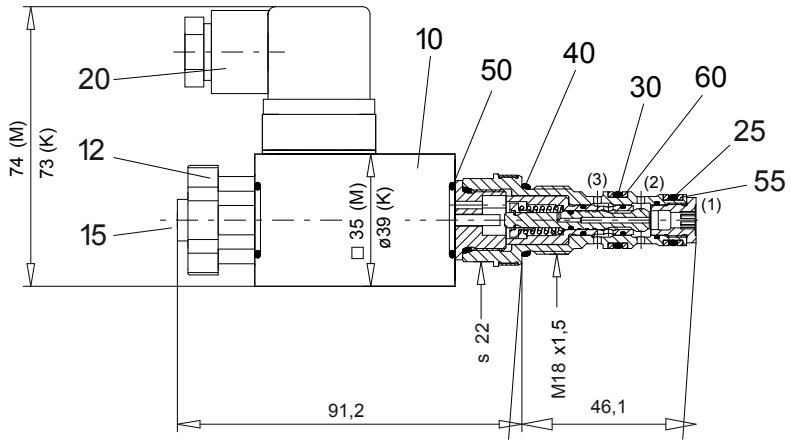
Cavity drawing for 2/2-way version
to ISO 7789–18–01–0–98



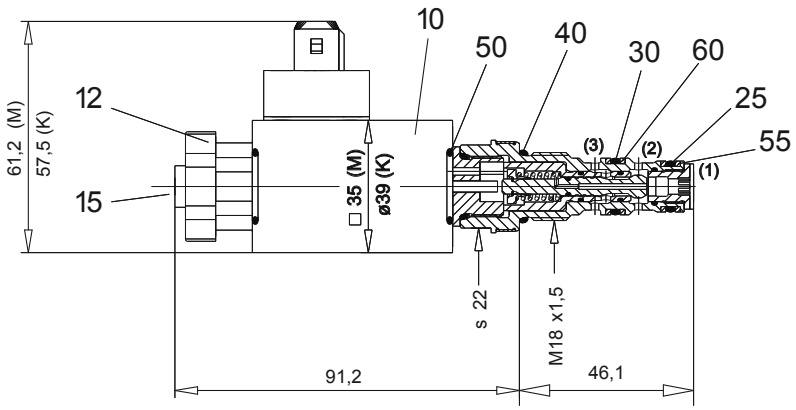
For detailed cavity drawing and cavity tools
see data sheet 2.13-1002

DIMENSIONS / SECTIONAL DRAWING

3/2-way version
with DIN connector socket

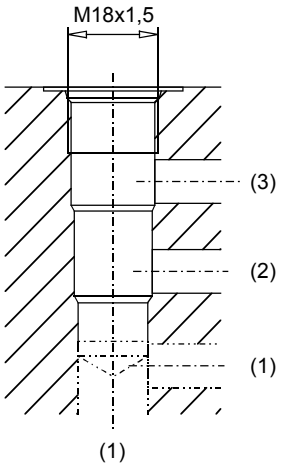


3/2-way version
with Junior-Timer connector socket



CAVITY

Cavity drawing for 3/2-way version
to Wandfluh standard



For detailed cavity drawing and cavity tools
see data sheet 2.13-1020

PARTS LIST

Position	Article	Description
10	260.4… 260.4… 206.23.. 206.23..	Coil complete MD35/16-… Coil complete MJ35/16-… Coil complete KD35/16-… Coil complete KJ35/16-…
12	154.2601	Knurled nut M16 x 1 x 18
15	239.2033	Plug HB0 (incl. seal)
20	219.2002	Plug
25	160.2093	O-ring ID 9,25 x 1,78
30	160.2111	O-ring ID 11,11 x 1,78
40	160.2156	O-ring ID 15,60 x 1,78
50	160.6156	O-ring viton ID 15,60 x 1,78
55	049.3137	Back-up ring RD 10,6 x 13,5 x 1,4
60	049.3156	Back-up ring RD 12,1 x 15 x 1,4

ACCESSORIES

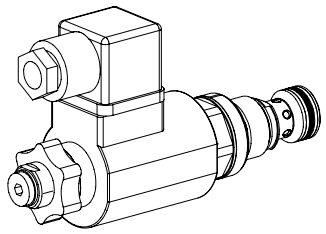
Cartridge built-in flange- or sandwich body

Flange valve	on request
Sandwich valve	on request

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
2/2- and 3/2-way version
- **Direct operated**
- **Q_{max} = 40 l/min**
- **p_{max} = 350 bar**

M22x1,5
ISO 7789



DESCRIPTION
Direct operated 2/2- and 3/2-way poppet valve in screw-in cartridge with thread M22 x1,5 for cavity to ISO 7789. The 2/2-way type can be supplied in a „normally closed“ and „normally open“ version. There are two versions of the slip-on coil. The coil type „M“ with steel housing and the more economical type „K“ with plastic moulded coil and a somewhat reduced performance compared to the steel type. The coil may be exchanged without opening the hydraulic circuit. The outside of the armature tube and the valve body are zinc coated for surface protection.

FUNCTION
The pressure tight switching solenoid and in turn the spring on the opposite side shift the guided poppet into an either open or closed position. Due to the equal-area- and balanced-poppet-design there are no undesired opening or closing forces. Fluid may pass the poppet valve in both directions. The poppet piston is sealed by an o-ring. The seat with metallic seal closes leak free in both directions.

APPLICATION
Wandfluh solenoid operated poppet valves are applied where an absolutly leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks and in size NG4 and NG6 flange and sandwich bodies. To machine the cavities in steel or aluminium blocks cavity tools may be supplied (hire or purchase). Please refer to the data sheets in register 2.13

TYPE CODE

S D S PM22 - [ ] - [ ] / [ ] [ ] 35 # [ ]

Poppet valve				
Direct operated				
Super-solenoid				
Screw-in cartridge M22x1,5				
2/2-way, „normally closed“		BA		
2/2-way, „normally open“		AB		
3/2-way		FG		
Nominal voltage U_N	12 VDC	G12	110 VAC	R110
	24 VDC	G24	115 VAC	R115
			230 VAC	R230
Slip-on coil	Plastic housing	K	(only for 12 VDC and 24 VDC available)	
	Metal housing round	M		
Electric connection				
Connector socket EN 175301-803 / ISO 4400		D		
Connector socket AMP Junior-Timer		J		
Coil version				
Design-Index (Subject to change)				

GENERAL SPECIFICATIONS

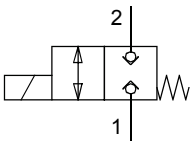
Description	Direct operated 2/2- and 3/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity to ISO 7789
Operation	Solenoid with exchangable slip-on coil
Mounting	Screw-in thread M22 x1,5
Ambient temperature	-20...+50 °C
Mounting position	any
Fastening torque	M_D = 50 Nm for cartridge $M_{D\,max}$ = 5 Nm or coil retaining nut
Masse	m = 0,49 kg 2/2-way valve with plastic coil m = 0,63 kg 2/2 valve with steel coil m = 0,51 kg 3/2-way valve with plastic coil m = 0,65 kg 3/2-way valve with steel coil
Volume flow	any (note performance limits)

HYDRAULIC SPECIFICATIONS

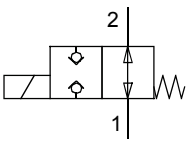
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 20/18/14 (Required filtration grade ß10…16≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 350 bar
Nominal flow	Q_N = 20 l/min
Max. volume flow	Q_{max} = up to 40 l/min
Pressure drop	Δp = < 7 bar with 20 l/min

SYMBOLS

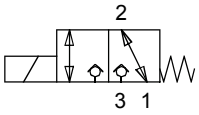
SDSPM22-BA…



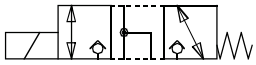
SDSPM22-AB…



SDSPM22-FG…



Transitional function „FG“

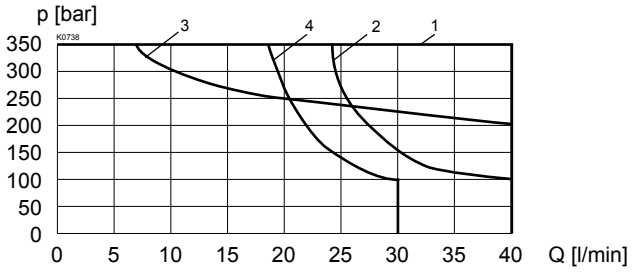


ELECTRICAL CONTROL

Construction	solenoid, wet pin, push type, pressure tight with exchangable slip-on coil
Standard nominal voltage:	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 up to 60 Hz ∗ Rectifier integrated in connector socket Other nominal voltages and wattages on request
Voltage tolerance	±10 % of nominal voltage
Protection class	IP 65 acc. to EN 60529 (if correctly mounted)
Relative duty cycle	100% DF (see data sheet 1.1-430)
Switching cycles	5 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connections / Power supply	Versions see type code
Solenoid type:	
– Steel coil (M.35/16)	data sheet 1.1-170
– Plastic coil (K.35/16)	data sheet 1.1-172

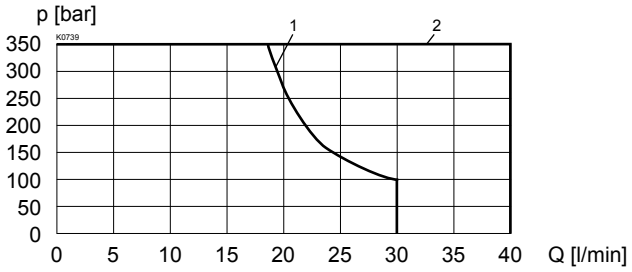
CHARACTERISTICS oil viscosity υ = 30 mm²/s

p = f (Q) Performance limits
at 10% under voltage
2/2-way type, „normally closed“ [BA]



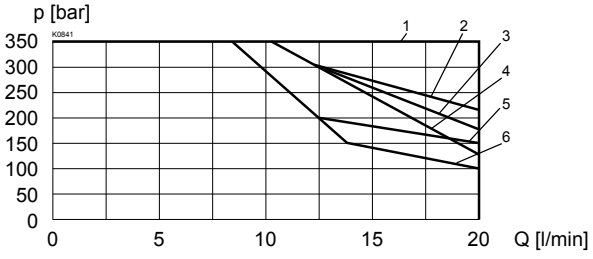
	Flow direction	
Version	1 → 2	2 → 1
SDSPM22-BA-…/„**M**“	1	2
SDSPM22-BA-…/„**K**“	3	4

p = f (Q) Performance limit
at 10% under voltage
2/2-way type, „normally open“ [AB]



	Flow direction	
Version	1 → 2	2 → 1
SDSPM22-AB-…/„**M**“	1	2
SDSPM22-AB-…/„**K**“	1	2

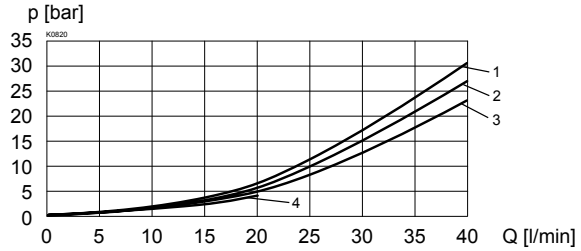
p = f (Q) Performance limits
at 10% under voltage
3/2-way type [FG]



	Flow direction			
Version	1 → 2	2 → 1	2 → 3	3 → 2
SDSPM22-FG-…/„**M**“	4	1	2	3
SDSPM22-FG-…/„**K**“	4	1	5	6

REMARK!
Depending on application the volume flow may be increased but during shifting the total volume flow (3 → 2 and 2 → 1) must not be higher than Q = 30 l/min

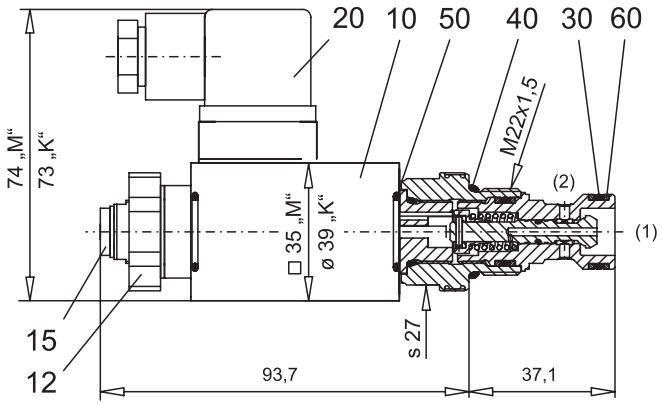
Δp = f (Q) Pressure volume flow characteristics



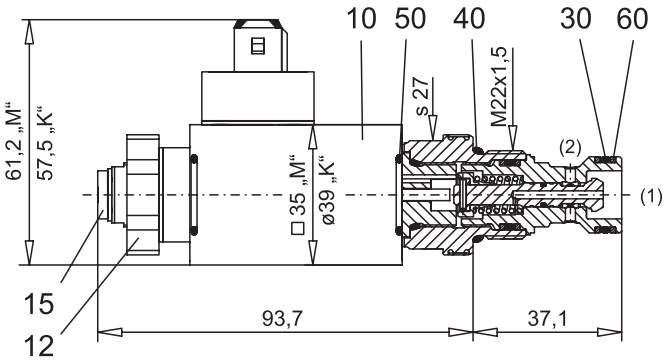
	Flow direction			
Version	1 → 2	2 → 1	2 → 3	3 → 2
SDSPM22-BA-…	1	2	–	–
SDSPM22-AB-…	3	4	–	–
SDSPM22-FG-…	4	4	1	1

DIMENSIONS / SECTIONAL DRAWING

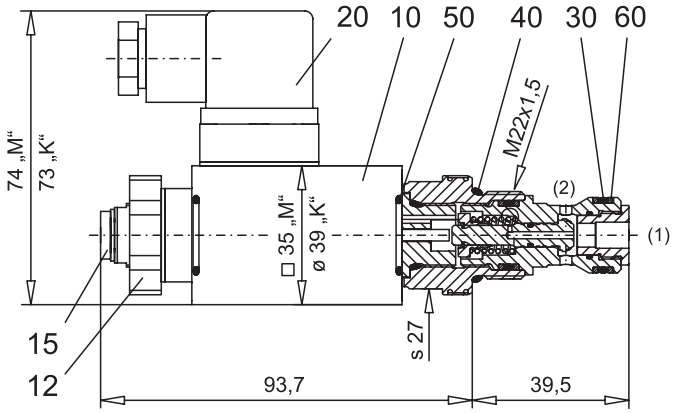
2/2-way version, „normally closed“ [BA]
with DIN connector socket



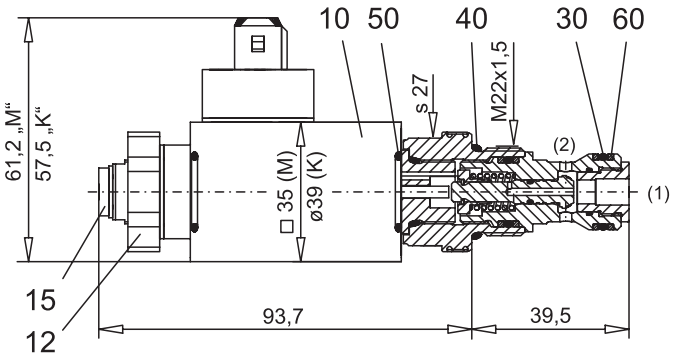
2/2-way version, „normally closed“ [BA]
with Junior-Timer connector socket



2/2-way version „normally open“ [AB]
with DIN connector socket

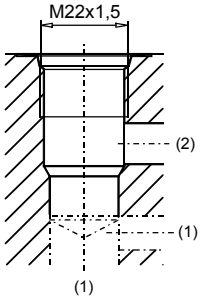


2/2-way version, „normally open“ [AB]
with Junior-Timer connector socket



CAVITY

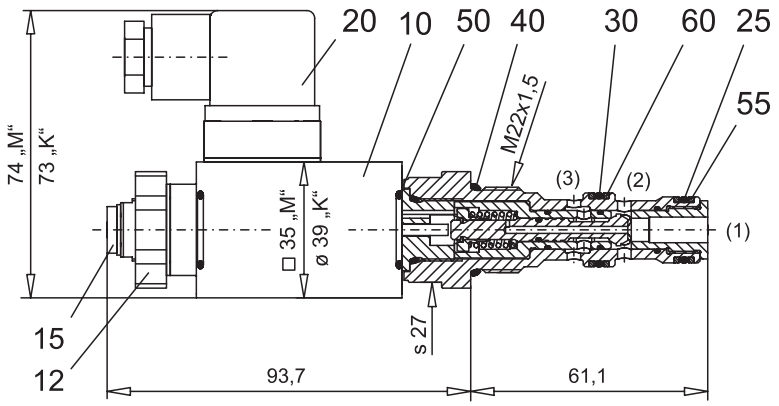
Cavity drawing for 2/2-way version
to ISO 7789–22–01–0–98



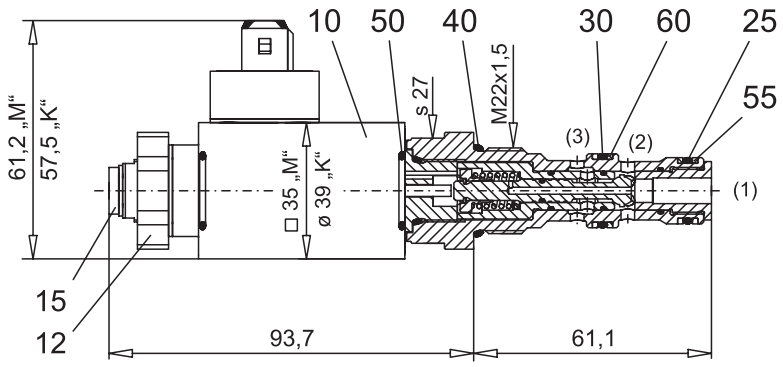
For detailed cavity drawing and cavity tools
see data sheet 2.13-1008

DIMENSIONS / SECTIONAL DRAWING

3/2-way version
with DIN connector socket

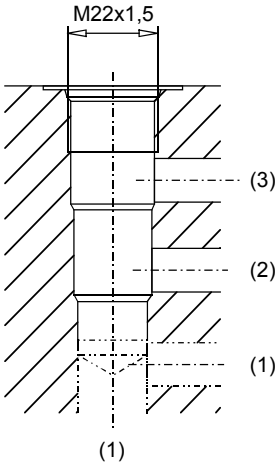


3/2-way version
with Junior-Timer connector socket



CAVITY

Cavity drawing for 3/2-way version
to ISO 7789–22–04–0–98



For detailed cavity drawing and cavity tools
see data sheet 2.13-1004

PARTS LIST

Position	Article	Description
10	260.4… 260.4… 206.23.. 206.23..	Coil complete MD35/16-… Coil complete MJ35/16-… Coil complete KD35/16-… Coil complete KJ35/16-…
12	154.2601	Knurled nut M16 x 1 x 18
15	239.2033	Plug HB0 (incl. seal)
20	219.2002	Plug
25	160.2140	O-ring ID 14,00 x 1,78
30	160.2156	O-ring ID 15,60 x 1,78
40	160.2188	O-ring ID 18,77 x 1,78
50	160.6156	O-ring viton ID 15,60 x 1,78
55	049.3176	Back-up ring RD 14,1 x 17 x 1,4
60	049.3196	Back-up ring RD 16,1 x 19 x 1,4

ACCESSORIES

Cartridge built-in flange- or sandwich body

Flange valve	register 1.11
Sandwich valve	register 1.11

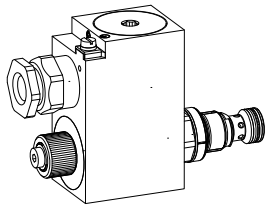
Technical explanation see data sheet 1.0-100

Poppet valve cartridges
2/2- and 3/2-way versions
- **direct operated**
- **Q_{max} = 40 l/min**
- **p_{max} = 350 bar**

M22x1,5

ISO 7789

Ex II 2 G Ex d IIC
Ex II 2 D Ex tD A21 IP65
Ex I M2 Ex d I Mb



DESCRIPTION

For explosion-hazard zones
Direct operated 2/2-way solenoid poppet valve in screw-in cartridge design with thread M22 x 1,5 for cavity acc. to ISO 7789.
Activated with Wandfluh explosion proof solenoid.
Solenoid coil in acc. with directive 94/9/EC (ATEX) for explosion-hazard zones.
The flameproof enclosures (acc. to EN/IEC 60079-1/31 and EN/IEC 61241-1) prevents an explosion in the interior from getting outside.
The design prevents a surface temperature capable of igniting.

INSTALLATION

For stack assembly please observe the remarks in the operating instructions.

SECURITY OPERATED

The solenoid coil must only be put into operation, if the requirements of the operating instructions supplied are observed to their full extent.
In case of non-observance, no liability can be assumed.

CERTIFICATES

in accordance with	Surface gas + dust	Mining
ATEX	x	x
IECEx	x	x
GOST Ex	x	x
Australia	x	x
Inmetro	x	x
NEPSI	x	

The certificates can be found on **www.wandfluh.com** / DOWNLOADS / Accompanying Ex-proof / **MKY45/18-..-L..**

FUNCTION

For the function «normally closed» with deenergised pull-type solenoid, and «normally open» with energised push-type solenoid, the differential area poppet piston is held in closed position by a spring and seals leak free from port 2 to 1. If pull-type solenoid is energised respectively push-type solenoid deenergised, the poppet piston will open flow passage from 2 to 1 after having reached the opening pressure. In the «normally closed» valve with deenergised solenoid respectively the «normally open» valve with energised solenoid flow passage from 1 to 2 is open when the opening pressure has been reached.

APPLICATION

These valves are suitable for applications in explosion-hazard zones, open cast and also in mines. Wandfluh solenoid operated poppet valves are applied where an absolutly leak free closing of the valve is essential like in load holding-, clamping- or gripping functions. The screw-in cartridges are mainly used in mobile or stationary integrated blocks and in size NG4-Mini and NG6 flange and sandwich bodies. To machine the cavities in steel or aluminium blocks, cavity tools may be supplied (hire or purchase). Please refer to the data sheets in register 2.13.

TYPE CODE

S D Y PM22 - ☐ / ☐ / ☐ / ☐ # ☐

Poppet valve			
Direct operated			
Explosion proof solenoid, Ex d			
Screw-in cartridge M22 x 1,5			
2/2-way, «normally closed»		BA	
2/2-way, «normally open»		AB	
3/2-way		FG	
Nominal voltage U_N	12 VDC	G12	
	24 VDC	G24	
	115 VAC	R115	
	230 VAC	R230	
			Ambient temp by:
Nominal power P_N	15 W	L15	70 °C
	21 W	L21	50 °C
Certificate	ATEX, IECEx, GOST Ex		
	Australia	AU	Inmetro IM NEPSI NP
Design-Index (Subject to change)			

GENERAL SPECIFICATIONS

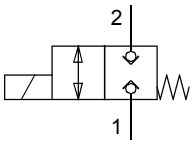
Description	Direct operated 2/2- and 3/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity acc. to ISO 7789
Operation	Solenoid
Mounting	Screw-in thread M22 x 1,5
Admissible ambient temperature	Execution L15: -20…+70 °C (operation as T1…T4/T130 °C) Execution L21: -20…+50 °C (operation as T1…T4/T130 °C) In case of U_N < 20V, the max. ambient temperature has to be reduced by 10 °C.
Mounting position	any, preverable horizontal
Fastening torque	M_D = 50 Nm for fixing screw M_D = 5 Nm for knurled nut
Weight	m = 2,25 kg 2/2-way m = 2,3 kg 3/2-way
Volume flow	see symbols

HYDRAULIC SPECIFICATIONS

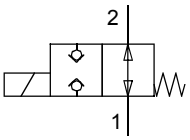
Fluid	Mineral oil, other fluid on request
Contamination	ISO 4406:1999, classe 18/16/13
Verschmutzungsgrad	(Required filtration grade ß6…10≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s bis 320 mm²/s
Admissible fluid temperature	Execution L15: -20…+70 °C (operation as T1…T4/T130 °C) Execution L21: -20…+50 °C (operation as T1…T4/T130 °C)
Working pressure	p_{max} = 350 bar
Nominal flow	Q_N = 20 l/min
Max. volume flow	Q_{max} = 40 l/min
Pressure drop	see characteristics
Opening pressure	1,4 bar

SYMBOLS

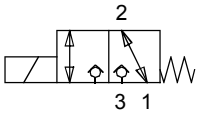
SDYPM22 - **BA**…



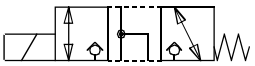
SDYPM22 - **AB**…



SDYPM22 - **FG**…



Transitional functions - **«FG»**…



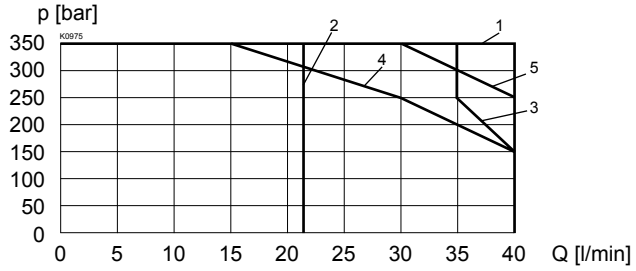
ELECTRICAL CONTROL

Construction	Switching solenoid, wet pin pull- or push type, pressure tight
Standard-nominal voltage	U_N = 12 VDC, U_N = 24 VDC U_N = 115 VAC, U_N = 230 VAC AC = 50 to 60 Hz ±2%; with integrated two way rectifier
Voltage tolerance	±10% of nominal voltage
Protection class	IP 67 acc. to EN 60529
Relative duty cycle	100% ED
Switching cycles	5000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection / Power supply	Through cable entry for cable diameter ∅ 6,5…14 mm
Temperature class	acc. to EN 60079-0
Execution L15/L21:	T1…T4
Nominal power	
Execution L15:	15 W
Execution L21:	21 W

For further electrical characteristics, refer to the data sheet of the solenoid coil: 1.1-183

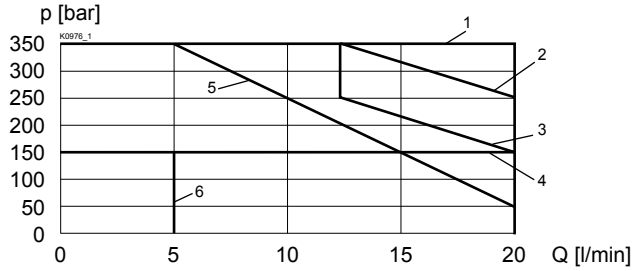
CHARACTERISTICS oil viscosity ν = 30 mm²/s

p = f (Q) Performance limit at –10 %
2/2-way type (measured at 50 °C)



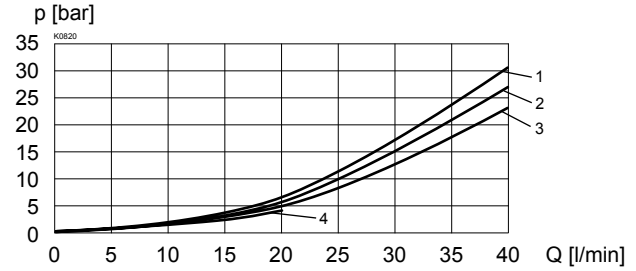
	Flow direction	
Version	1 → 2	2 → 1
SDYPM22-BA-L21	1	1
SDYPM22-AB-L21	2	1
SDYPM22-BA-L15	4	3
SDYPM22-AB-L15	2	5

p = f (Q) Performance limit at –10 %
3/2-way type [FG] (measured at 50 °C)



	Flow direction			
Version	1 → 2	2 → 1	2 → 3	3 → 2
SDYPM22-FG-L21	3	1	1	2
SDYPM22-FG-L15	5	1	4	6

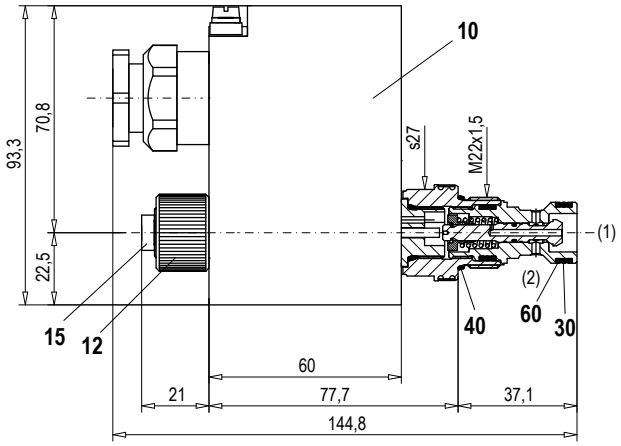
Δp = f (Q) Pressure volume flow characteristics



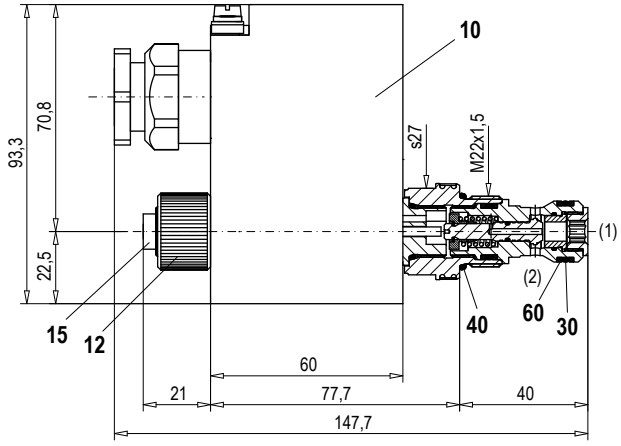
	Flow direction			
Version	1 → 2	2 → 1	2 → 3	3 → 2
SDYPM22-BA-…	1	2	-	-
SDYPM22-AB-…	3	4	-	-
SDYPM22-FG-…	4	4	1	1

DIMENSIONS / SECTIONAL DRAWING

2/2-way, «normally closed» [BA]

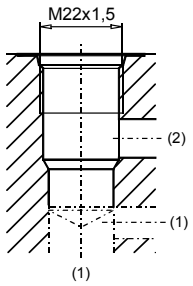


2/2-way, «normally open» [AB]



CAVITY

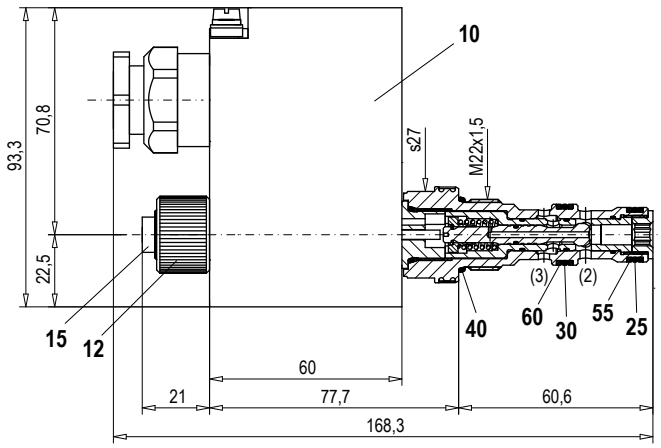
Cavity drawing for 2/2-way version to
ISO 7789–22–01–0–98



For detailed cavity drawing and cavity tools
see data sheet 2.13-1008

DIMENSIONS / SECTIONAL DRAWING

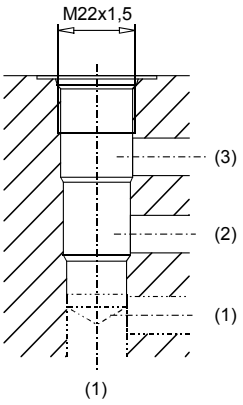
3/2-way version



Dimensions of the solenoid coil refer to data sheet 1.1-183

CAVITY

Cavity drawing for 3/2-way version to
ISO 7789–22–04–0–98



For detailed cavity drawing and cavity tools
see data sheet 2.13-1004

PARTS LIST

Position	Article	Description
10	263.6…	Coil type MKY 45/18 x 60...
12	032.1617	Knurled nut M16 x 1 x 18
15	239.2033	Plug HB0 (incl. Seal)
25	160.2140	O-ring ID 14,00 x 1,78
30	160.2156	O-ring ID 15,60 x 1,78
40	160.2188	O-ring ID 18,77 x 1,78
55	049.3176	Back-up ring RD 14,1 x 17 x 1,4
60	049.3196	Back-up ring RD 16,1 x 19 x 1,4

ACCESSORIES

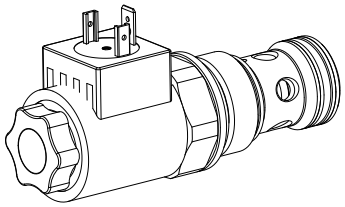
Cartridge built-in flange- or sandwich body:

Flange valve	register 1.11
Sandwich valve	register 1.11

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
2/2-way versions
- **Pilot operated**
- **Q_{max} = 150 l/min**
- **p_{max} = 350 bar**

M33x2
ISO 7789



DESCRIPTION
Pilot operated 2/2-way poppet valve in screw-in cartridge design with thread M33x2 for cavity acc. to ISO 7789. The valve functions „normally open“ and „normally closed“ are available. There are two versions of the slip-on coil. The coils may be exchanged without opening the hydraulic circuit. The outside of the armature tube and the valve body are zinc coated for surface protection.

FUNCTION
In case of the version CB, the valve is closed in the flowing condition, in case of the BC in the non-flowing condition. In this, the differential spool is pressed against the seat by means of a spring and the applied pressure, and it closes free of leakage oil from 2 to 1. In the opposite direction of flow, the valve opens after reaching the opening pressure. In case of the version AB, the valve is closed in the flowing condition, in case of the BA in the non-flowing condition. In this, the differential spool is pressed against the seat by means of a spring and the applied pressure, and it closes free of leakage oil in both directions of flow.

APPLICATION
Wandfluh solenoid operated poppet valves are applied where a leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks and in size NG10 flange and sandwich bodies. To machine the cavities in steel or aluminium blocks cavity tools may be supplied (hire or purchase). Please refer to the data sheets in register 2.13

TYPE CODE

S V S PM33 - [ ] - [ ] / [ ] [ ] - [ ] # [ ]

Poppet valve				
Pilot operated				
Super-solenoid				
Screw-in cartridge M33x2				
Designation see symbols				
Nominal voltage U_N	12 VDC	G12	115 VAC	R115
	24 VDC	G24	230 VAC	R230
	without coil	X5		
Slip-on coil	Metal housing round	W		
	Metal housing square	M*		
Connection version				
Connector socket EN 175301-803 / ISO 4400		D		
Connector socket AMP Junior-Timer		J		
Connector Deutsch DT04-2P		G		
Sealing material	NBR			
	FKM (Viton)	D1		
Design-Index (Subject to change)				

* Only available in conjunction with other nominal voltages and connection versions. (See data sheet 1.1-171)

GENERAL SPECIFICATIONS

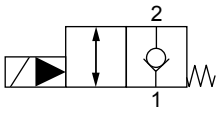
Description	Pilot operated 2/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity acc. to ISO 7789
Operation	Solenoid with exchangable slip-on coil
Mounting	Screw-in thread M33x2
Ambient temperature	-20…+50 °C
Mounting position	any
Fastening torque:	M_D = 80 Nm for cartridge
	$M_{D\,max}$ = 5 Nm for knurled nut
Weight:	m = 0,7 kg
Volume flow	see symbols

HYDRAULIC SPECIFICATIONS

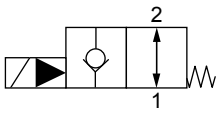
Fluid	Mineral oil, other fluid on request
Contamination	ISO 4406:1999, class 20/18/14
efficiency	(Required filtration grade ß 10...16 ≥ 75)
	(see data sheet 1.0-50/2)
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 350 bar
Max. volume flow	Q_{max} = 150 l/min
Pressure drop	Δp_{max} = < 10 bar with 100 l/min
Opening pressure:	
Version CB / BC	2 → 1 = 2 bar / 1 → 2 = 1,5 bar
Version AB / BA	2 → 1 = 3 bar / 1 → 2 = 3 bar

SYMBOLS

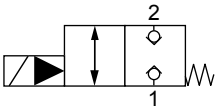
SVSPM33 - **BC**…



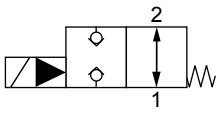
SVSPM33 - **CB**…



SVSPM33 - **BA**…



SVSPM33 - **AB**…



ELECTRICAL CONTROL

Construction	Switching solenoid, wet pin pull- or push type, pressure tight
Standard nominal voltage:	U_N = 12 VDC, 24 VDC U_N = 115 VAC∗, 230 VAC∗ AC = 50 bis 60 Hz

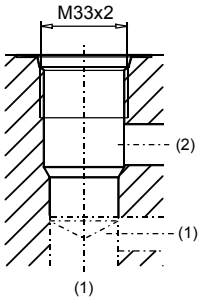
– ∗ Rectifier integrated in connector socket
– Other nominal voltages and wattages on request

Voltage tolerance	±10 % of nominal voltage
Protection class acc. EN 60 529	Connection version D: IP 65 J: IP 66 G: IP 67 and 69 K
Relative duty cycle	100 % DF (see data sheet 1.1-430)
Switching cycles	5'000 /h
Operating life	10^7 (number of switching cycles, theoretically)
Connections/Power supply	Versions see type code

For further electrical specifications see data sheet 1.1-169 (W)
1.1-171 (M)

CAVITY

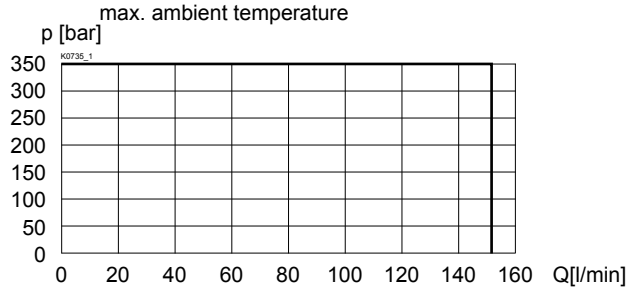
Cavity drawing to
ISO 7789–33–01–0–98



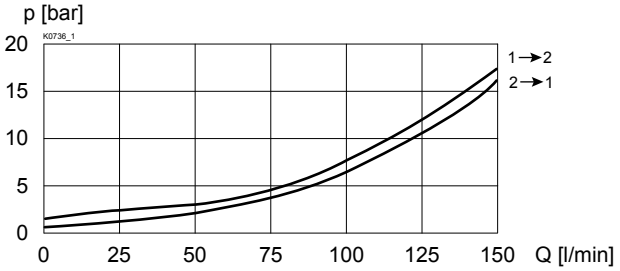
For detailed cavity drawing and
cavity tools see data sheet 2.13-1005

CHARACTERISTICS Oil viscosity ν= 30 mm²/s

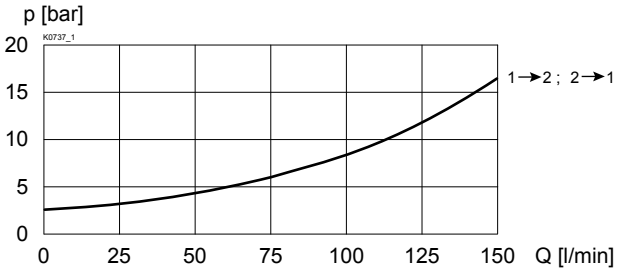
p = f (Q) Performance limits at 10% under voltage and max. ambient temperature



Δp = f (Q) Pressure volume flow characteristics [BC / CB]



Δp = f (Q) Pressure volume flow characteristics [BA / AB]



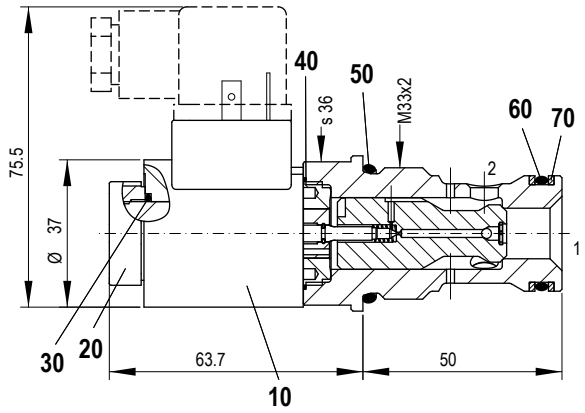
SWITCHING TIME

		Flow direction	under current	Current-free
SVSPM33	**BA**	1 → 2	appr. 30 ms	appr. 100 ms
		2 → 1	appr. 30 ms	appr. 100 ms
	AB	1 → 2	appr. 100 ms	appr. 60 ms
		2 → 1	appr. 100 ms	appr. 80 ms
	CB	2 → 1	appr. 60 ms	appr. 70 ms
	BC	2 → 1	appr. 30 ms	appr. 70 ms

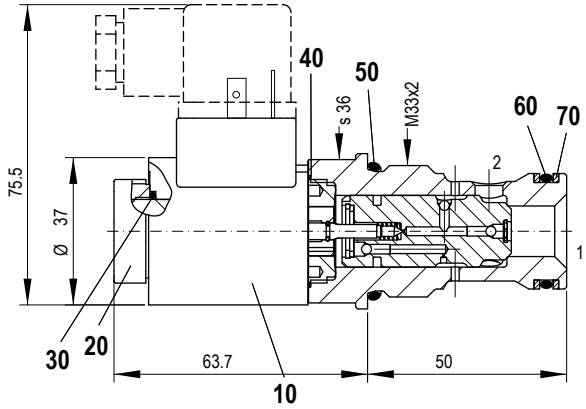
The switching times depend on the volume flow, pressure and viscosity. In case of small volume flows, the switching time can get considerably longer..

DIMENSIONS / SECTIONAL DRAWING

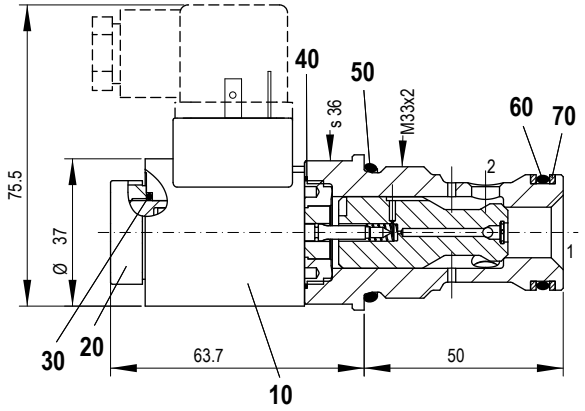
2/2-way version, «normally closed» [BC]



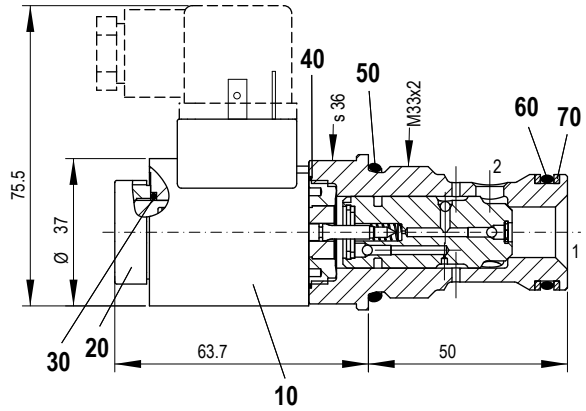
2/2-way version, «normally closed» [BA]



2/2-way version, «normally open» [CB]



2/2-way version, «normally open» [AB]



Dimensions of the other connection versions see data sheet 1.1.169 and 1.1-171

PARTS LIST

Position	Article	Description
10		EN 175301
	206.2213	Solenoid coil WDE37/16x40-G24
	206.2212	Solenoid coil WDE37/16x40-G12
		Junior-Timer
	206.2218	Solenoid coil WJE 37/16x40-G24
	206.2217	Solenoid coil WJE 37/16x40-G12
		Deutsch
	206.2220	Solenoid coil WGE37/16x40-G24
	206.2219	Solenoid coil WGE37/16x40-G12
20	154.2600	Knurled nut
30	160.2156	O-ring ID 15,60x1,78 (NBR)
40	160.1260	O-ring ID 26,00x1,00 (NBR)
50	160.2298	O-ring ID 29,82x2,62 (NBR)
	160.6296	O-ring ID 29,82x2,62 (FMK)
60	160.2238	O-ring ID 23,81x2,6 (NBR)
	160.6238	O-ring ID 23,81x2,62 (FMK)
70	049.3297	Backup ring RD 24,5x29x1,4

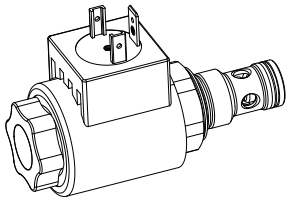
ACCESSORIES

Mating connector EN 175301-803 Article no. 219.2002

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
2/2-way version
- **Pilot operated**
- **Q_{max} = 50 l/min**
- **p_{max} = 350 bar**

M18x1,5
ISO 7789



DESCRIPTION
Pilot operated 2/2-way poppet valve in screw-in cartridge design with thread M18x1,5 for cavity according to ISO 7789. The valve functions «normally open-CB» and «normally closed-BC» are available.There are two versions of the slip-on coil. The coils may be exchanged without opening the hydraulic circuit. The outside of the armature tube and the valve body are zinc coated for surface protection.

FUNCTION
• «Current-free open -CB»
In case of a current-free solenoid, it is possible for the flow to pass through the valve in both directions. In case of a solenoid under current, the valve is blocked from connection 2 to 1. If, however, the pressure in connection 1 rises above the solenoid power, the valve opens.

• «Current-free closed -BC»
In case of a current-free solenoid, the valve is blocked from connection 2 to 1. If, however, the pressure in connection 1 is higher than in connection 2, the valve opens. In case of a solenoid under current, it is possible for the flow to pass through the valve in both directions.

APPLICATION
Wandfluh solenoid operated poppet valves are applied where an absolutly leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks. To machine the cavities, cavity tools may be supplied (hire or purchase). Please refer to the data sheets in register 2.13.

TYPE CODE

S V S PM18 - [ ] - [ ] / [ ] [ ] - [ ] # [ ]

Poppet valve					
Pilot operated					
Super-solenoid					
Screw-in cartridge M18x1,5					
2/2-way, «normally closed»		BC			
2/2-way, «normally open»		CB			
Nominal voltage U_N	12 VDC	G12	115 VAC	R115	
	24 VDC	G24	230 VAC	R230	
	without coil	X5			
Slip-on coil	Metal housing round	W			
	Metal housing square	M*			
Connection version					
Connector socket EN 175301-803 / ISO 4400		D			
Connector socket AMP Junior-Timer		J			
Connector Deutsch DT04-2P		G			
Sealing material: NBR					
FKM (Viton)		D1			
Design-Index (Subject to change)					

* Only available in conjunction with other nominal voltages and connection versions. (See data sheet 1.1-171)

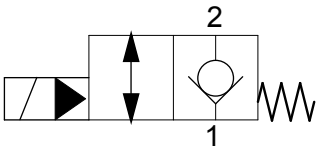
GENERAL SPECIFICATIONS

Description	Pilot operated 2/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity acc. to ISO 7789
Operation	Solenoid with exchangable slip-on coil
Mounting	Screw-in thread M18x1,5
Ambient temperature	-20...+50 °C 100% DF -20...+70 °C 40% DF/5 min (see characteristics)
Mounting position	any
Fastening torque	M_D = 30 Nm for cartridge $M_{D\,max}$ = 5 Nm for knurled nut
Weight	m = 0,42 kg
Volume flow	see symbols

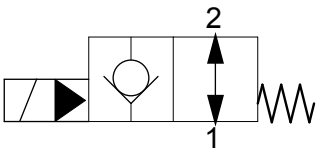
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination	ISO 4406:1999, classe 20/18/14
Efficiency	(Required filtration grade ß10…16≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 350 bar
Nominal flow	Q_N = 50 l/min
Pressure drop	see characteristics

SYMBOLS



SVSPM18-BC…



SVSPM18-CB…

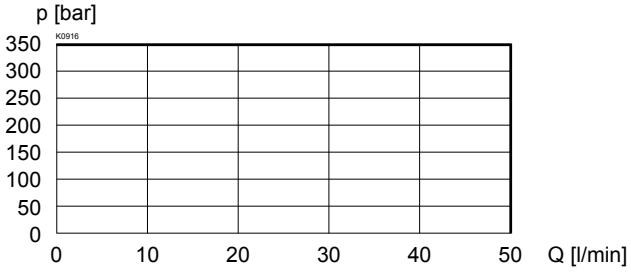
ELECTRICAL CONTROL

Construction	Solenoid, wet pin, pull or push type, pressure tight with exchangable slip-on coil
Standard nominal voltage:	U_N = 12 VDC, 24 VDC U_N = 115 VAC∗, 230 VAC∗ AC = 50 up to 60 Hz
- ∗ Rectifier integrated in connector socket	
- Other nominal voltages and wattages on request	
Voltage tolerance	±10 % of nominal voltage
Protection class acc. EN 60 529	Connection version D: IP 65 J: IP 66 G: IP 67 and 69 K
Relative duty cycle (DF)	100% DF ambient temperature to 50 °C 40% DF ambient temperature to 70 °C (see characteristics)
Operating life	10^7 (number of switching cycles, theoretically)
Connections/Power supply	Versions see type code

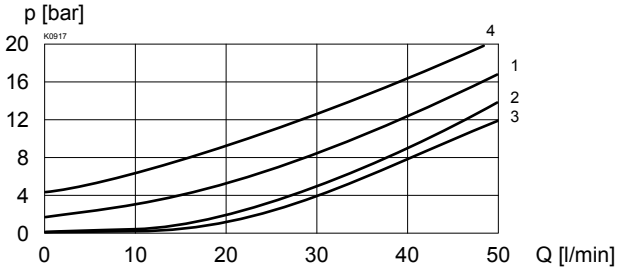
For further electrical specifications see data sheet 1.1-169 (W)
1.1-171 (M)

CHARACTERISTICS Oil viscosity υ = 30 mm²/s

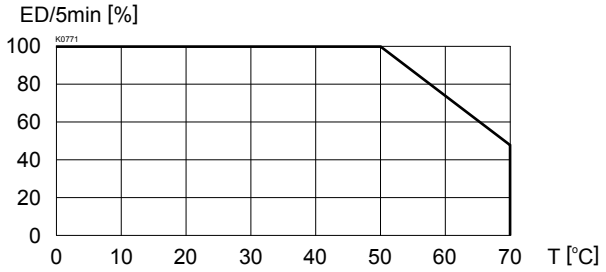
p = f (Q) Performance limits at 10% under voltage and max. ambient temperature



Δp = f (Q) Pressure volume flow characteristics



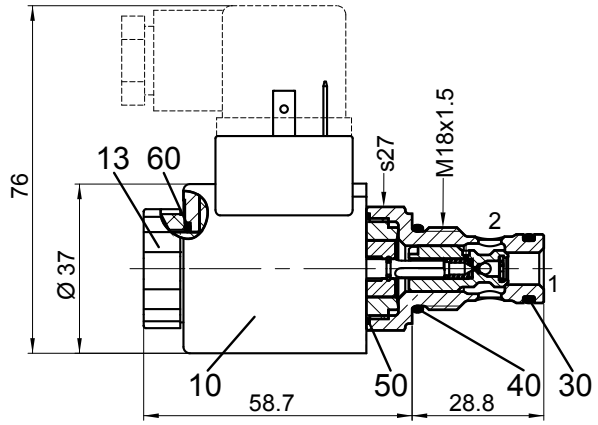
Relative duty factor = f (Ambient temperature)



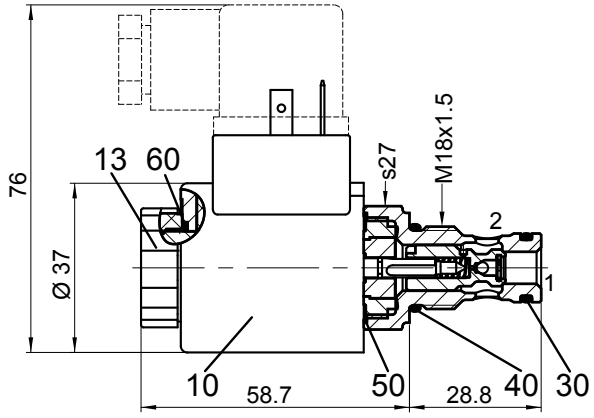
		BC	CB
Current-free	1 → 2	1	2
Current-free	2 → 1	–	3
under current	1 → 2	2	4
under current	2 → 1	3	–

DIMENSIONS / SECTIONAL DRAWING

SVSPM18-BC



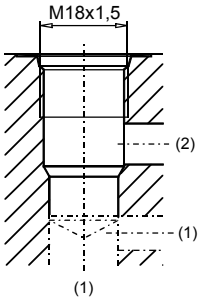
SVSPM18-CB



Dimensions of the other connection versions see data sheet 1.1.169 and 1.1-171

CAVITY

Cavity drawing acc. to
ISO 7789–18–01–0–98



For detailed cavity drawing and cavity tools
see data sheet 2.13-1002

PARTS LIST

Position	Article	Description
		EN 175301
10	206.2213	Solenoid coil WDE37 / 16 x 40-G24
	206.2212	Solenoid coil WDE37 / 16 x 40-G12
		Junior-Timer
	206.2218	Solenoid coil WJE 37 / 16 x 40-G24
	206.2217	Solenoid coil WJE 37 / 16 x 40-G12
		Deutsch
	206.2220	Solenoid coil WGE37 / 16 x 40-G24
	206.2219	Solenoid coil WGE37 / 16 x 40-G12
13	154.2600	Knurled nut M16x1x9
30	160.0108	O-ring polyurethane ID 10,82x1,78
40	160.2156	O-ring ID 15,60x1,78 (NBR)
	160.8156	O-ring ID 15,60x1,78 (FKM)
50	160.1220	O-ring ID 22,00x1,00
60	160.2156	O-ring ID 15,60x1,78

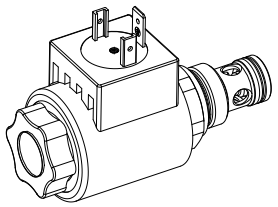
ACCESSORIES

Mating connector EN 175301-803 Article no. 219.2002

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
2/2-way version
- **Pilot operated**
- **Q_{max} = 50 l/min**
- **p_{max} = 350 bar**

M20x1,5
Wandfluh-Standard



DESCRIPTION
Pilot operated 2/2-way poppet valve in screw-in cartridge design with thread M20x1,5 for cavity according to Wandfluh standard. The valve functions «normally open-CB» and «normally closed-BC» are available. There are two versions of the slip-on coil. The coils may be exchanged without opening the hydraulic circuit. The outside of the armature tube and the valve body are zinc coated for surface protection.

FUNCTION
• «Current-free open -CB»
In case of a current-free solenoid, it is possible for the flow to pass through the valve in both directions. In case of a solenoid under current, the valve is blocked from connection 2 to 1. If, however, the pressure in connection 1 rises above the solenoid power, the valve opens.

• «Current-free closed -BC»
In case of a current-free solenoid, the valve is blocked from connection 2 to 1. If, however, the pressure in connection 1 is higher than in connection 2, the valve opens. In case of a solenoid under current, it is possible for the flow to pass through the valve in both directions.

APPLICATION
Wandfluh solenoid operated poppet valves are applied where an absolutly leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks.

TYPE CODE

S V S PM20 - [ ] - [ ] / [ ] [ ] - [ ] # [ ]

Poppet valve					
Pilot operated					
Super-solenoid					
Screw-in cartridge M20x1,5					
2/2-way, «normally closed»		BC			
2/2-way, «normally open»		CB			
Nominal voltage U_N	12 VDC	G12	115 VAC	R115	
	24 VDC	G24	230 VAC	R230	
	without coil	X5			
Slip-on coil	Metal housing round	W			
	Metal housing square	M*			
Connection version					
Connector socket EN 175301-803 / ISO 4400		D			
Connector socket AMP Junior-Timer		J			
Connector Deutsch DT04-2P		G			
Sealing material:	NBR				
	FKM (Viton)	D1			
Design-Index (Subject to change)					

* Only available in conjunction with other nominal voltages and connection versions. (See data sheet 1.1-171)

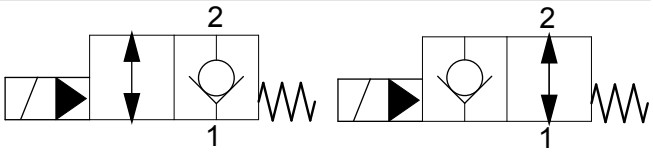
GENERAL SPECIFICATIONS

Description	Pilot operated 2/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity acc. to Wandfluh standard
Operation	Solenoid with exchangable slip-on coil
Mounting	Screw-in thread M20x1,5
Ambient temperature	-20...+50 °C 100% DF -20...+70 °C 40% DF/5 min (see characteristics)
Mounting position	any
Fastening torque	M_D = 30 Nm for cartridge $M_{D\,max}$ = 5 Nm for knurled nut
Weight	m = 0,42 kg
Volume flow	see symbols

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination	ISO 4406:1999, classe 20/18/14
Efficiency	(Required filtration grade ß10…16≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 350 bar
Nominal flow	Q_N = 50 l/min
Pressure drop	see characteristics

SYMBOLS



SVSPM20-BC… SVSPM20-CB…

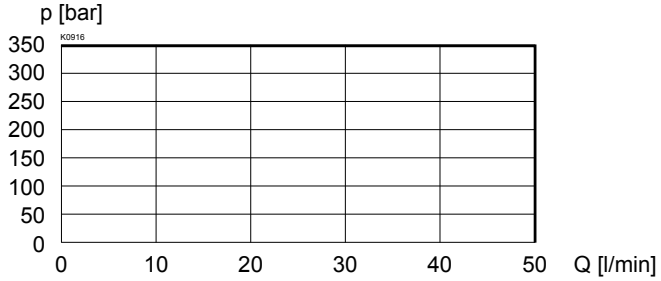
ELECTRICAL CONTROL

Construction	Solenoid, wet pin, pull or push type, pressure tight with exchangable slip-on coil
Standard nominal voltage:	U_N = 12 VDC, 24 VDC U_N = 115 VAC∗, 230 VAC∗ AC = 50 up to 60 Hz
- ∗ Rectifier integrated in connector socket	
- Other nominal voltages and wattages on request	
Voltage tolerance	±10 % of nominal voltage
Protection class acc. EN 60 529	Connection version D: IP 65 J: IP 66 G: IP 67 and 69 K
Relative duty cycle (DF)	100% DF ambient temperature to 50 °C 40% DF ambient temperature to 70 °C (see characteristics)
Operating life	10^7 (number of switching cycles, theoretically)
Connections/Power supply	Versions see type code

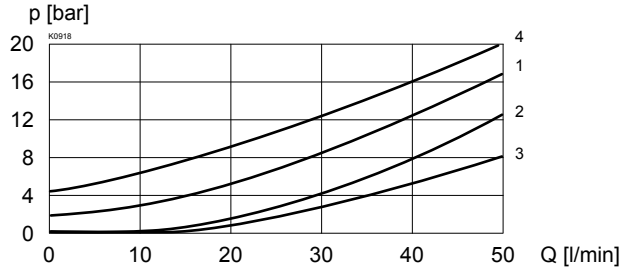
For further electrical specifications see data sheet 1.1-169 (W)
1.1-171 (M)

CHARACTERISTICS Oil viscosity υ = 30 mm²/s

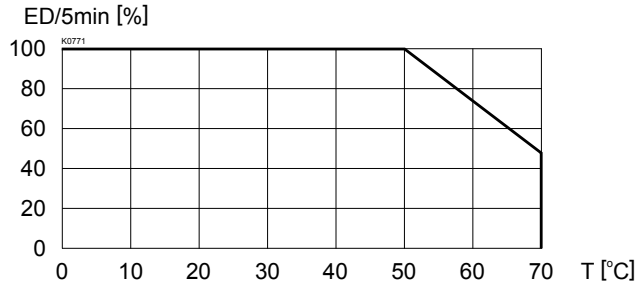
p = f (Q) Performance limits at 10% under voltage and max. ambient temperature



Δp = f (Q) Pressure volume flow characteristics



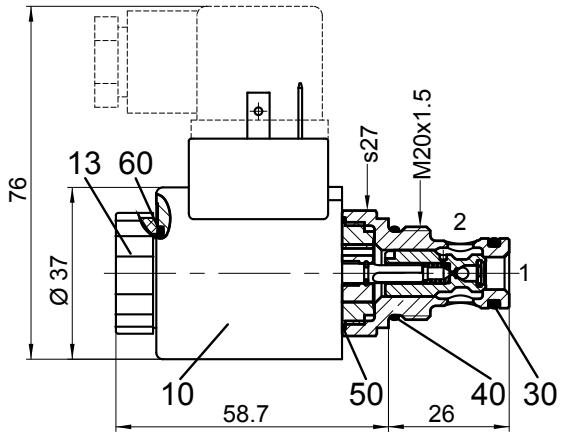
Relative duty factor = f (Ambient temperature)



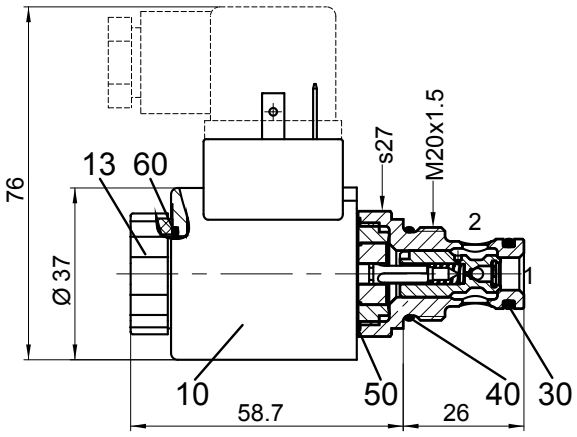
		BC	CB
Current-free	1 → 2	1	2
Current-free	2 → 1	–	3
under current	1 → 2	2	4
under current	2 → 1	3	–

DIMENSIONS / SECTIONAL DRAWING

SVSPM20-BC



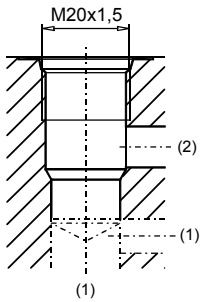
SVSPM20-CB



Dimensions of the other connection versions see data sheet 1.1.169 and 1.1-171

CAVITY

Cavity drawing acc. to
Wandfluh standard



For detailed cavity drawing and cavity tools
see data sheet 2.13-1042

PARTS LIST

Position	Article	Description
		EN 175301
10	206.2213	Solenoid coil WDE37 / 16 x 40-G24
	206.2212	Solenoid coil WDE37 / 16 x 40-G12
		Junior-Timer
	206.2218	Solenoid coil WJE 37 / 16 x 40-G24
	206.2217	Solenoid coil WJE 37 / 16 x 40-G12
		Deutsch
	206.2220	Solenoid coil WGE37 / 16 x 40-G24
	206.2219	Solenoid coil WGE37 / 16 x 40-G12
13	154.2600	Knurled nut M16x1x9
30	160.0108	O-ring polyurethane ID 10,82x1,78
40	160.2170	O-ring ID 17,17x1,78 (NBR)
	160.8172	O-ring ID 17,17x1,78 (FKM)
50	160.1220	O-ring ID 22,00x1,00
60	160.2156	O-ring ID 15,60x1,78

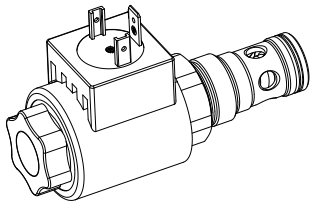
ACCESSORIES

Mating connector EN 175301-803 Article no. 219.2002

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
2/2-way version
- **Pilot operated**
- **Q_{max} = 80 l/min**
- **p_{max} = 350 bar**

M22x1,5
ISO 7789



DESCRIPTION
Pilot operated 2/2-way poppet valve in screw-in cartridge design with thread M22x1,5 for cavity according to ISO 7789. The valve functions «normally open-CB» and «normally closed-BC» are available. There are two versions of the slip-on coil. The coils may be exchanged without opening the hydraulic circuit. The outside of the armature tube and the valve body are zinc coated for surface protection.

FUNCTION
• «Current-free open -CB»
In case of a current-free solenoid, it is possible for the flow to pass through the valve in both directions. In case of a solenoid under current, the valve is blocked from connection 2 to 1. If, however, the pressure in connection 1 rises above the solenoid power, the valve opens.

• «Current-free closed -BC»
In case of a current-free solenoid, the valve is blocked from connection 2 to 1. If, however, the pressure in connection 1 is higher than in connection 2, the valve opens. In case of a solenoid under current, it is possible for the flow to pass through the valve in both directions.

APPLICATION
Wandfluh solenoid operated poppet valves are applied where an absolutly leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks. To machine the cavities, cavity tools may be supplied (hire or purchase). Please refer to the data sheets in register 2.13.

TYPE CODE

S V S PM22 - [ ] - [ ] / [ ] [ ] - [ ] # [ ]

Poppet valve					
Pilot operated					
Super-solenoid					
Screw-in cartridge M22x1,5					
2/2-way, «normally closed»		BC			
2/2-way, «normally open»		CB			
Nominal voltage U_N	12 VDC	G12	115 VAC	R115	
	24 VDC	G24	230 VAC	R230	
	without coil	X5			
Slip-on coil	Metal housing round	W			
	Metal housing square	M*			
Connection version					
Connector socket EN 175301-803 / ISO 4400		D			
Connector socket AMP Junior-Timer		J			
Connector Deutsch DT04-2P		G			
Sealing material: NBR					
FKM (Viton)		D1			
Design-Index (Subject to change)					

* Only available in conjunction with other nominal voltages and connection versions. (See data sheet 1.1-171)

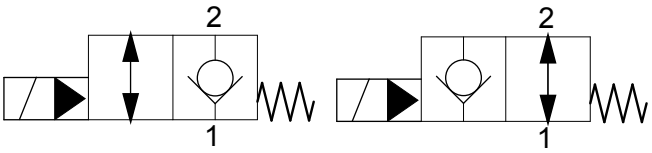
GENERAL SPECIFICATIONS

Description	Pilot operated 2/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity acc. to ISO 7789
Operation	Solenoid with exchangable slip-on coil
Mounting	Screw-in thread M22x1,5
Ambient temperature	-20...+50 °C 100% DF -20...+70 °C 40% DF/5 min (see characteristics)
Mounting position	any
Fastening torque	M_D = 50 Nm for cartridge $M_{D\,max}$ = 5 Nm for knurled nut
Weight	m = 0,45 kg
Volume flow	see symbols

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination	ISO 4406:1999, classe 20/18/14
Efficiency	(Required filtration grade ß10…16≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 350 bar
Nominal flow	Q_N = 80 l/min
Pressure drop	see characteristics

SYMBOLS



SVSPM22-BC… SVSPM22-CB…

ELECTRICAL CONTROL

Construction	Solenoid, wet pin, pull or push type, pressure tight with exchangable slip-on coil
Standard nominal voltage:	U_N = 12 VDC, 24 VDC U_N = 115 VAC∗, 230 VAC∗ AC = 50 up to 60 Hz

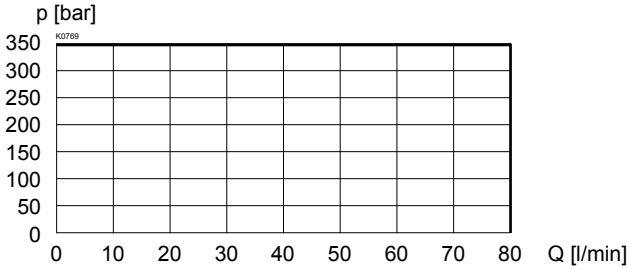
- ∗ Rectifier integrated in connector socket
- Other nominal voltages and wattages on request

Voltage tolerance	±10 % of nominal voltage
Protection class acc. EN 60 529	Connection version D: IP 65 J: IP 66 G: IP 67 and 69 K
Relative duty cycle (DF)	100% DF ambient temperature to 50 °C 40% DF ambient temperature to 70 °C (see characteristics)
Operating life	10^7 (number of switching cycles, theoretically)
Connections/Power supply	Versions see type code

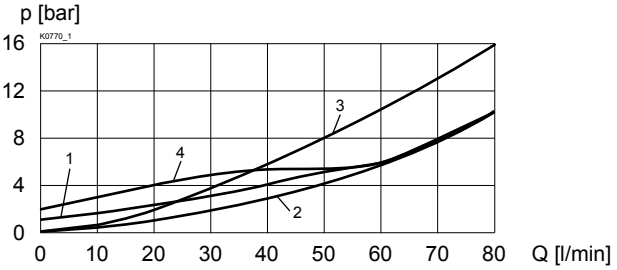
For further electrical specifications see data sheet 1.1-169 (W)
1.1-171 (M)

CHARACTERISTICS Oil viscosity υ = 30 mm²/s

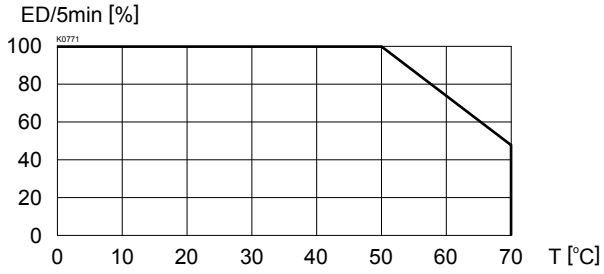
p = f (Q) Performance limits at 10% under voltage and max. ambient temperature



Δp = f (Q) Pressure volume flow characteristics



Relative duty factor = f (Ambient temperature)



		BC	CB
Current-free	1 → 2	1	2
Current-free	2 → 1	–	3
under current	1 → 2	2	4
under current	2 → 1	3	–

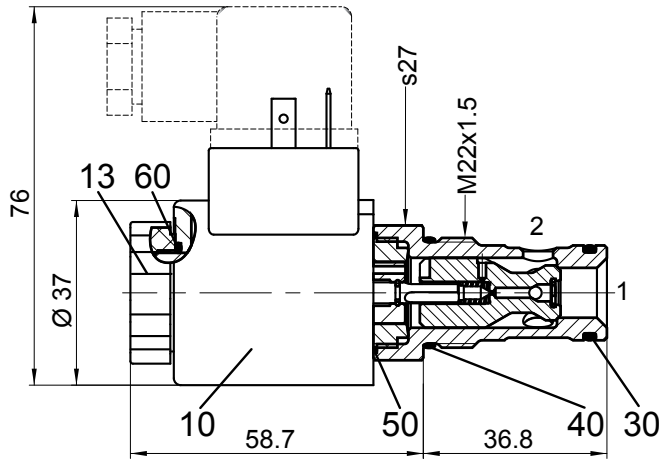
SWITCHING TIME

		Flow direction	Under current	Current-free
SVSPM22	**BC**	2 → 1	appr. 30 ms	appr. 150 ms
	CB	2 → 1	appr. 45 ms	appr. 85 ms

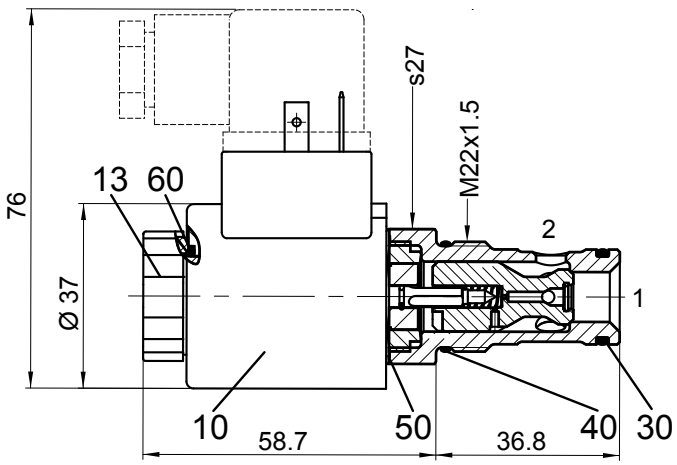
The switching times depend on the volume flow, pressure and viscosity. In case of small volume flows, the switching time can get considerably longer.

DIMENSIONS / SECTIONAL DRAWING

SVSPM22-BC



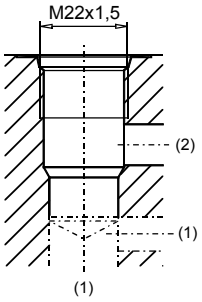
SVSPM22-CB



Dimensions of the other connection versions see data sheet 1.1.169 and 1.1-171

CAVITY

Cavity drawing acc. to
ISO 7789–22–01–0–98



For detailed cavity drawing and cavity tools
see data sheet 2.13-1008

PARTS LIST

Position	Article	Description
		EN 175301
10	206.2213	Solenoid coil WDE37 / 16 x 40-G24
	206.2212	Solenoid coil WDE37 / 16 x 40-G12
		Junior-Timer
	206.2218	Solenoid coil WJE 37 / 16 x 40-G24
	206.2217	Solenoid coil WJE 37 / 16 x 40-G12
		Deutsch
	206.2220	Solenoid coil WGE37 / 16 x 40-G24
	206.2219	Solenoid coil WGE37 / 16 x 40-G12
13	154.2600	Knurled nut M16x1x9
30	160.0157	O-ring polyurethane ID 15,60x1,78
40	160.2188	O-ring ID 18,77x1,78 (NBR)
	160.8188	O-ring ID 18,77x1,78 (FKM)
50	160.1220	O-ring ID 22,00x1,00
60	160.2156	O-ring ID 15,60x1,78

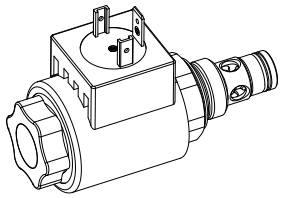
ACCESSORIES

Mating connector EN 175301-803 Article no. 219.2002

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
2/2-way version
- **Pilot operated**
- **Q_{max} = 50 l/min**
- **p_{max} = 350 bar**

$^3/_4$"-16 UNF
Wandfluh-Norm



DESCRIPTION

Pilot operated 2/2-way poppet valve in screw-in cartridge design with thread $^3/_4$"-16 UNF for cavity according to Wandfluh standard. The valve functions «normally open-CB» and «normally closed-BC» are available. There are two versions of the slip-on coil. The coils may be exchanged without opening the hydraulic circuit. The outside of the armature tube and the valve body are zinc coated for surface protection.

FUNCTION

• «Current-free open -CB»
In case of a current-free solenoid, it is possible for the flow to pass through the valve in both directions. In case of a solenoid under current, the valve is blocked from connection 2 to 1. If, however, the pressure in connection 1 rises above the solenoid power, the valve opens.

• «Current-free closed -BC»
In case of a current-free solenoid, the valve is blocked from connection 2 to 1. If, however, the pressure in connection 1 is higher than in connection 2, the valve opens. In case of a solenoid under current, it is possible for the flow to pass through the valve in both directions.

APPLICATION

Wandfluh solenoid operated poppet valves are applied where an absolutly leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks.

TYPE CODE

S V S PU08 - [ ] - [ ] / [ ] [ ] - [ ] # [ ]

Poppet valve					
Pilot operated					
Super-solenoid					
Screw-in cartridge 3/4“ 16UNF					
2/2-way, «normally closed»		BC			
2/2-way, «normally open»		CB			
Nominal voltage U_N	12 VDC	G12	115 VAC	R115	
	24 VDC	G24	230 VAC	R230	
	without coil	X5			
Slip-on coil	Metal housing round	W			
	Metal housing square	M*			
Connection version					
Connector socket EN 175301-803 / ISO 4400		D			
Connector socket AMP Junior-Timer		J			
Connector Deutsch DT04-2P		G			
Sealing material: NBR					
FKM (Viton)		D1			
Design-Index (Subject to change)					

* Only available in conjunction with other nominal voltages and connection versions. (See data sheet 1.1-171)

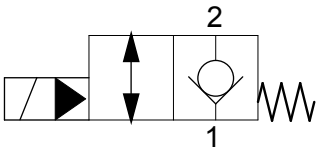
GENERAL SPECIFICATIONS

Description	Pilot operated 2/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity acc. to Wandfluh standard
Operation	Solenoid with exchangable slip-on coil
Mounting	Screw-in thread $^3/_4$"-16 UNF
Ambient temperature	-20...+50 °C 100% DF -20...+70 °C 40% DF/5 min (see characteristics)
Mounting position	any
Fastening torque	M_D = 30 Nm for cartridge $M_{D\,max}$ = 5 Nm for knurled nut
Weight	m = 0,42 kg
Volume flow	see symbols

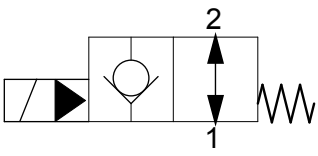
HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination	ISO 4406:1999, classe 20/18/14
Efficiency	(Required filtration grade ß10…16≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 350 bar
Nominal flow	Q_N = 50 l/min
Pressure drop	see characteristics

SYMBOLS



SVSPU08-BC…



SVSPU08-CB…

ELECTRICAL CONTROL

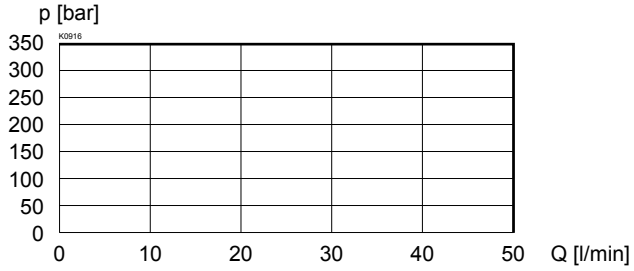
Construction	Solenoid, wet pin, pull or push type, pressure tight with exchangable slip-on coil
Standard nominal voltage:	U_N = 12 VDC, 24 VDC U_N = 115 VAC∗, 230 VAC∗ AC = 50 up to 60 Hz
Voltage tolerance	±10 % of nominal voltage
Protection class acc. EN 60 529	Connection version D: IP 65 J: IP 66 G: IP 67 and 69 K
Relative duty cycle (DF)	100% DF ambient temperature to 50 °C 40% DF ambient temperature to 70 °C (see characteristics)
Operating life	10^7 (number of switching cycles, theoretically)
Connections/Power supply	Versions see type code

- ∗ Rectifier integrated in connector socket
- Other nominal voltages and wattages on request

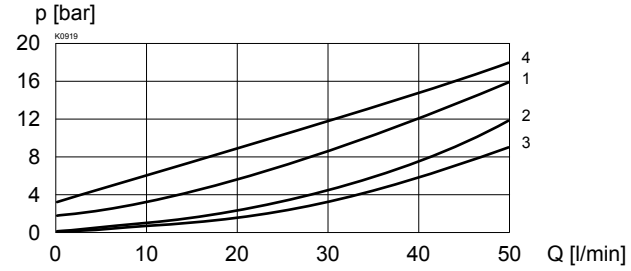
For further electrical specifications see data sheet 1.1-169 (W)
1.1-171 (M)

CHARACTERISTICS Oil viscosity υ = 30 mm²/s

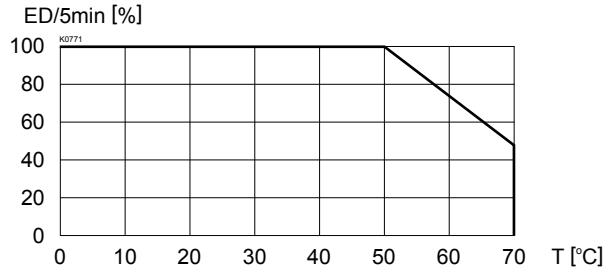
p = f (Q) Performance limits at 10% under voltage and max. ambient temperature



Δp = f (Q) Pressure volume flow characteristics



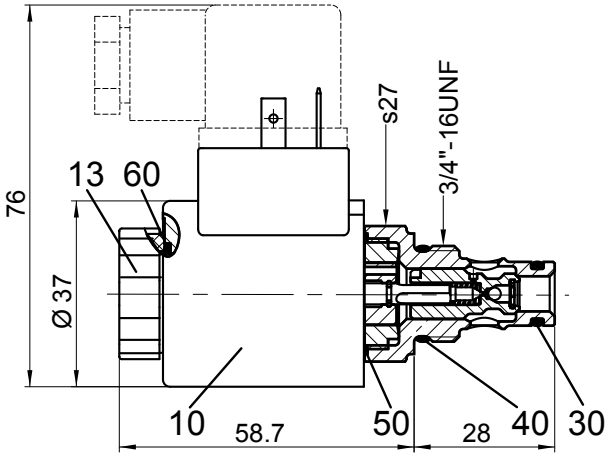
Relative duty factor = f (Ambient temperature)



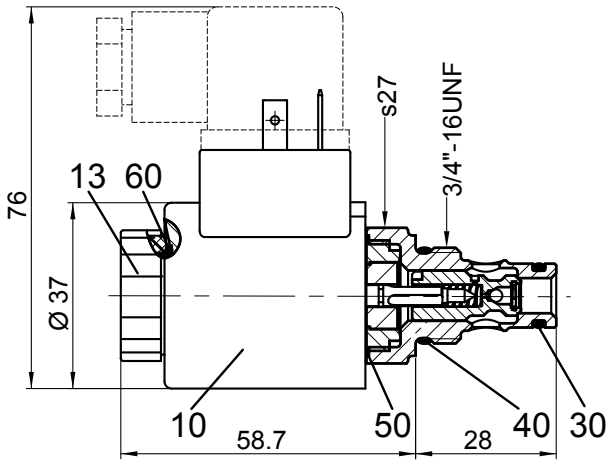
		BC	CB
Current-free	1 → 2	1	2
Current-free	2 → 1	–	3
under current	1 → 2	2	4
under current	2 → 1	3	–

DIMENSIONS / SECTIONAL DRAWING

SVSPU08-BC



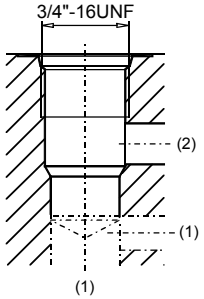
SVSPU08-CB



Dimensions of the other connection versions see data sheet 1.1.169 and 1.1-171

CAVITY

Cavity drawing acc. to
Wandfluh standard



For detailed cavity drawing and cavity tools
see data sheet 2.13-1043

PARTS LIST

Position	Article	Description
		EN 175301
10	206.2213	Solenoid coil WDE37 / 16 x 40-G24
	206.2212	Solenoid coil WDE37 / 16 x 40-G12
		Junior-Timer
	206.2218	Solenoid coil WJE 37 / 16 x 40-G24
	206.2217	Solenoid coil WJE 37 / 16 x 40-G12
		Deutsch
	206.2220	Solenoid coil WGE37 / 16 x 40-G24
	206.2219	Solenoid coil WGE37 / 16 x 40-G12
13	154.2600	Knurled nut M16x1x9
30	160.0091	O-ring polyurethane ID 9,25x1,78
40	160.2156	O-ring ID 15,60x1,78 (NBR)
	160.8156	O-ring ID 15,60x1,78 (NBR)
50	160.1220	O-ring ID 22,00x1,00
60	160.2156	O-ring ID 15,60x1,78

ACCESSORIES

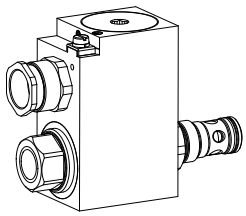
Mating connector EN 175301-803 Article no. 219.2002

Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
2/2-way version
- **Pilot operated**
- **Q_{max} = 80 l/min**
- **p_{max} = 350 bar**

M22x1,5
ISO 7789

Ex II 2 G Ex d IIC
Ex II 2 D Ex tD A21 IP65
Ex I M2 Ex d I Mb



DESCRIPTION
For explosion-hazard zones
Pilot operated 2/2-way solenoid poppet valve in screw-in cartridge design with thread M22x1,5 for cavity acc. to ISO 7789.
Activated with Wandfluh explosion proof solenoid.
Solenoid coil in acc. with directive 94/9/EC (ATEX) for explosion-hazard zones.
The flameproof enclosures (acc. to EN/IEC 60079-1/31 and EN/IEC 61241-1) prevents an explosion in the interior from getting outside.
The design prevents a surface temperature capable of igniting.

INSTALLATION
For stack assembly please observe the remarks in the operating instructions.

SECURITY OPERATED
The solenoid coil must only be put into operation, if the requirements of the operating instructions supplied are observed to their full extent.
In case of non-observance, no liability can be assumed.

CERTIFICATES

in accordance with	Surface gas + dust	Mining
ATEX	x	x
IECEx	x	x
GOST Ex	x	x
Australia	x	x
Inmetro	x	x
NEPSI	x	

The certificates can be found on **www.wandfluh.com** / DOWNLOADS / Accompanying Ex-proof / **MKY45/18-..-L..**

FUNCTION
• «Current-free open -CB»
In case of a current-free solenoid, it is possible for the flow to pass through the valve in both directions. In case of a solenoid under current, the valve is blocked from connection 2 to 1. If, however, the pressure in connection 1 rises above the solenoid power, the valve opens.

• «Current-free closed -BC»
In case of a current-free solenoid, the valve is blocked from connection 2 to 1. If, however, the pressure in connection 1 is higher than in connection 2, the valve opens. In case of a solenoid under current, it is possible for the flow to pass through the valve in both directions.

APPLICATION
Wandfluh solenoid operated poppet valves are applied where an absolutly leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks. To machine the cavities, cavity tools may be supplied (hire or purchase). Please refer to the data sheets in register 2.13.

TYPE CODE

S V Y PM22 - [ ] / [ ] / [ ] / [ ] # [ ]

Poppet valve			
Direct operated			
Explosion proof solenoid, Ex d			
Screw-in cartridge M22x1,5			
2/2-way, «normally closed»		BC	
2/2-way, «normally open»		CB	
Nominal voltage U_N	12 VDC	G12	
	24 VDC	G24	
	115 VAC	R115	
	230 VAC	R230	
			Ambient temp by:
Nominal power P_N	15 W	L15	70 °C
	9 W	L9	40 °C or 90°C (only for CB)
Certificate	ATEX, IECEx, GOST Ex		
	Australia	AU	Inmetro IM NEPSI NP
Design-Index (Subject to change)			

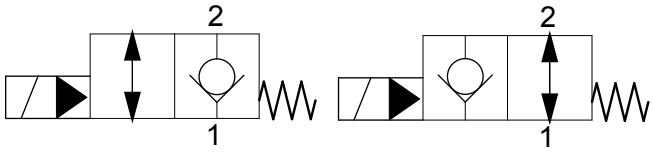
GENERAL SPECIFICATIONS

Description	Pilot operated 2/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity acc. to ISO 7789
Operation	Solenoid with exchangable slip-on coil
Mounting	Screw-in thread M22x1,5
Admissible ambient temperature	Execution L15: -20…+70 °C (operation as T1…T4/T130 °C) Execution L9: -20…+40 °C (operation as T1…T6/T80 °C) -20…+90 °C (operation as T1…T4/T130 °C) In case of U_N < 20V, the max. ambient temperature has to be reduced by 10 °C.
Mounting position	any, preverable horizontal
Fastening torque	M_D = 50 Nm for fixing screw M_D = 5 Nm for knurled nut
Weight	m = 2,25 kg
Volume flow	see symbols

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 18/16/13 (Required filtration grade ß6…10≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s bis 320 mm²/s
Admissible fluid temperature	Execution L15: -20…+70 °C (operation as T1…T4/T130 °C) Execution L9: -20…+40 °C (operation as T1…T6/T80 °C) -20…+70 °C (operation as T1…T4/T130 °C)
Working pressure	p_{max} = 350 bar
Max. volume flow	Q_{max} = 80 l/min
Pressure drop	see characteristics
Opening pressure	
Version BC	1 bar
Version CB	2 bar

SYMBOLS



SVYPM22-BC… SVYPM22-CB…

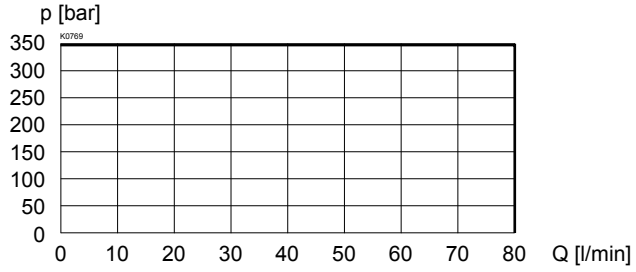
ELECTRICAL CONTROL

Construction	Switching solenoid, wet pin pull- or push type, pressure tight
Standard-nominal voltage	U_N = 12 VDC, U_N = 24 VDC U_N = 115 VAC, U_N = 230 VAC AC = 50 to 60 Hz ±2%; with integrated two way rectifier
Voltage tolerance	±10 % of nominal voltage
Protection class	IP 67 acc. to EN 60529
Relative duty cycle	100% ED
Switching cycles	5000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection / Power supply	Through cable entry for cable diameter ∅ 6,5…14 mm
Temperature class	acc. to EN 60079-0
Execution L15/L21	T1…T4
Execution L9	T1…T6
Nominal power	
Execution L15	15 W
Execution L9	9 W

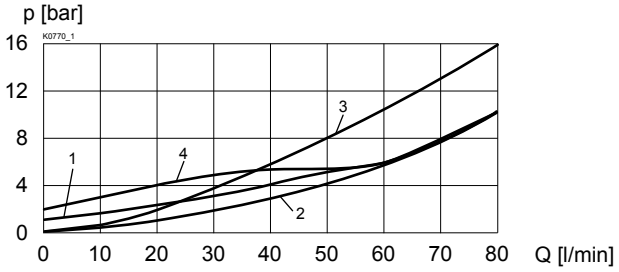
For further electrical characteristics, refer to the data sheet of the solenoid coil: 1.1-183

CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limits at 10% under voltage and max. ambient temperature



Δp = f (Q) Pressure volume flow characteristics



		BC	CB
Current-free	1 → 2	1	2
Current-free	2 → 1	–	3
Under current	1 → 2	2	4
Under current	2 → 1	3	–

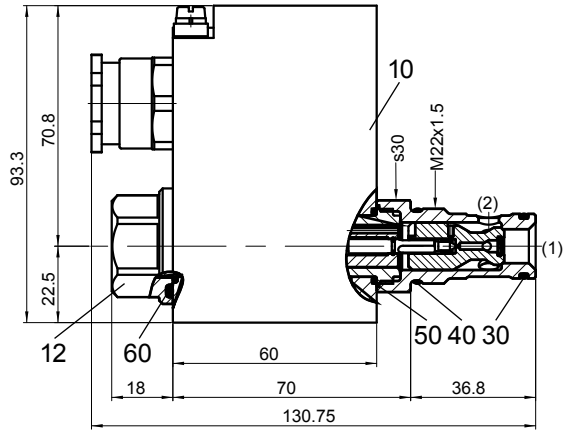
SWITCHING TIME

		Flow direction	Under current	Current-free
SVYPM22	**BC**	2 → 1	appr. 30 ms	appr. 120 ms
	CB	2 → 1	appr. 50 ms	appr. 80 ms

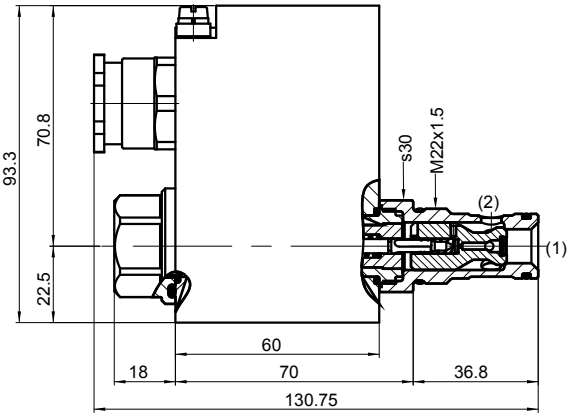
The switching times depend on the volume flow, pressure and viscosity. In case of small volume flows, the switching time can get considerably longer.

DIMENSIONS / SECTIONAL DRAWING

SVYPM22-BC



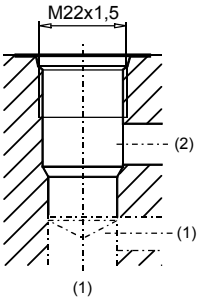
SVYPM22-CB



Dimensions of the solenoid coil refer to data sheet 1.1-183

CAVITY

Cavity drawing acc. to
ISO 7789–22–01–0–98



For detailed cavity drawing and cavity tools
see data sheet 2.13-1008

PARTS LIST

Position	Article	Description
10	263.6...	Coil type MKY 45/18x60...
12	154.2603	Knurled nut M16x1x18
30	160.0157	O-ring Polyurethan ID 15,60x1,78
40	160.2188 160.8188	O-ring ID 18,77x1,78 (NBR) O-ring ID 18,77x1,78 (FKM)
50	160.1220	O-ring ID 22,00x1,00
60	160.2251	O-ring ID 25,07x2,62

ACCESSORIES

Cartridge built-in flange- or sandwich body:

Flange valve	register 1.11
Sandwich valve	register 1.11

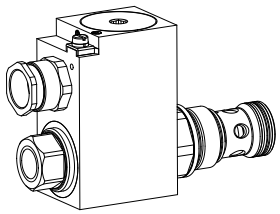
Technical explanation see data sheet 1.0-100

Solenoid poppet valve cartridge
2/2-way version
- **Pilot operated**
- **Q_{max} = 150 l/min**
- **p_{max} = 350 bar**

M33x2

ISO 7789

Ex II 2 G Ex d IIC
Ex II 2 D Ex tD A21 IP65
Ex I M2 Ex d I Mb



DESCRIPTION

For explosion-hazard zones
Pilot operated 2/2-way solenoid poppet valve in screw-in cartridge design with thread M33x2 for cavity acc. to ISO 7789.
Activated with Wandfluh explosion proof solenoid.
Solenoid coil in acc. with directive 94/9/EC (ATEX) for explosion-hazard zones.
The flameproof enclosures (acc. to EN/IEC 60079-1/31 and EN/IEC 61241-1) prevents an explosion in the interior from getting outside.
The design prevents a surface temperature capable of igniting.

INSTALLATION

For stack assembly please observe the remarks in the operating instructions.

SECURITY OPERATED

The solenoid coil must only be put into operation, if the requirements of the operating instructions supplied are observed to their full extent.
In case of non-observance, no liability can be assumed.

CERTIFICATES

in accordance with	Surface gas + dust	Mining
ATEX	x	x
IECEx	x	x
GOST Ex	x	x
Australia	x	x
Inmetro	x	x
NEPSI	x	

The certificates can be found on **www.wandfluh.com** / DOWNLOADS / Accompanying Ex-proof / **MKY45/18-..-L..**

FUNCTION

In case of the version CB, the valve is closed in the flowing condition, in case of the BC in the non-flowing condition. In this, the differential spool is pressed against the seat by means of a spring and the applied pressure, and it closes free of leakage oil from 2 to 1. In the opposite direction of flow, the valve opens after reaching the opening pressure. In case of the version AB, the valve is closed in the flowing condition, in case of the BA in the non-flowing condition. In this, the differential spool is pressed against the seat by means of a spring and the applied pressure, and it closes free of leakage oil in both directions of flow.

APPLICATION

Wandfluh solenoid operated poppet valves are applied where an absolutly leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks. To machine the cavities, cavity tools may be supplied (hire or purchase). Please refer to the data sheets in register 2.13.

TYPE CODE

S V Y PM33 - ☐ / ☐ / ☐ / ☐ # ☐

- Poppet valve
- Pilot operated
- Explosion proof solenoid, Ex d
- Screw-in cartridge M33 x 2
- Description of symbols acc. to table
- Nominal voltage U_N: 12 VDC G12; 24 VDC G24; 115 VAC R115; 230 VAC R230
- Nominal power P_N: 15 W L15 (Ambient temp up to: 70 °C); 9 W L9 (40 °C or 90 °C (only for CB))
- Certificate: ATEX, IECEx, GOST Ex (blank); Australia AU; Inmetro IM; NEPSI NP
- Design-Index (Subject to change)

GENERAL SPECIFICATIONS

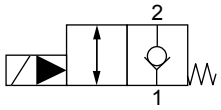
Description	Pilot operated 2/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity acc. to ISO 7789
Operation	Solenoid with exchangable slip-on coil
Mounting	Screw-in thread M33x2
Admissible ambient temperature	Execution L15: -20…+70 °C (operation as T1…T4/T130 °C) Execution L9: -20…+40 °C (operation as T1…T6/T80 °C) -20…+90 °C (operation as T1…T4/T130 °C) In case of U_N < 20V, the max. ambient temperature has to be reduced by 10 °C.
Mounting position	any, preverable horizontal
Fastening torque	M_D = 80 Nm for fixing screw M_D = 5 Nm for knurled nut
Weight	m = 2,45 kg
Volume flow	see symbols

HYDRAULIC SPECIFICATIONS

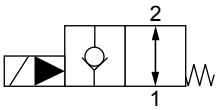
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 18/16/13 (Required filtration grade ß6…10≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s bis 320 mm²/s
Admissible fluid temperature	Execution L15: -20…+70 °C (operation as T1…T4/T130 °C) Execution L9: -20…+40 °C (operation as T1…T6/T80 °C) -20…+70 °C (operation as T1…T4/T130 °C)
Working pressure	p_{max} = 350 bar
Max. volume flow	Q_{max} = 150 l/min
Pressure drop	see characteristics
Opening pressure	
Version CB/BC	2 → 1 = 2 bar / 1 → 2 = 1,5 bar
Version AB/BA	2 → 1 = 3 bar / 1 → 2 = 3 bar

SYMBOLS

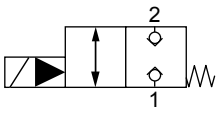
SVYPM33 - **BC**…



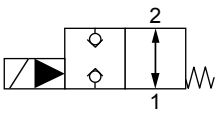
SVYPM33 - **CB**…



SVYPM33 - **BA**…



SVYPM33 - **AB**…



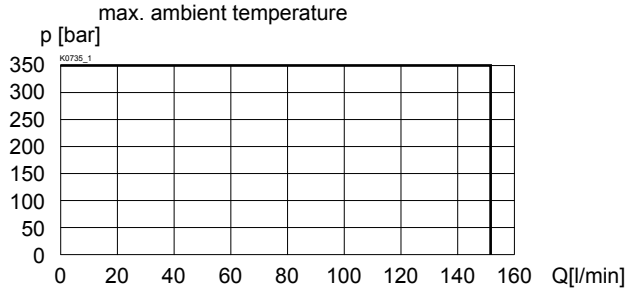
ELECTRICAL CONTROL

Construction	Switching solenoid, wet pin pull- or push type, pressure tight
Standard-nominal voltage	U_N = 12 VDC, U_N = 24 VDC U_N = 115 VAC, U_N = 230 VAC AC = 50 to 60 Hz ±2%; with integrated two way rectifier
Voltage tolerance	±10% of nominal voltage
Protection class	IP 67 acc. to EN 60529
Relative duty cycle	100% ED
Switching cycles	5000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection / Power supply	Through cable entry for cable diameter ∅ 6,5…14 mm
Temperature class	acc. to EN 60079-0
Execution L15/L21	T1…T4
Execution L9	T1…T6
Nominal power	
Execution L15	15 W
Execution L9	9 W

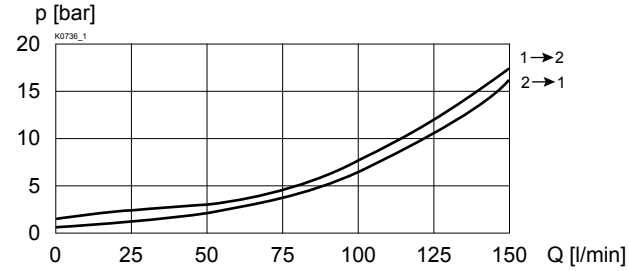
For further electrical characteristics, refer to the data sheet of the solenoid coil: 1.1-183

CHARACTERISTICS Oil viscosity v = 30 mm2/s

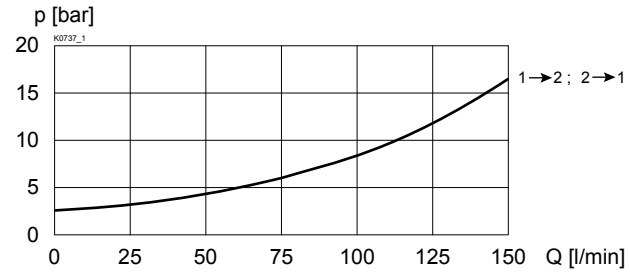
p = f (Q) Performance limits at 10% under voltage and max. ambient temperature



Δp = f (Q) Pressure volume flow characteristics [BC / CB]

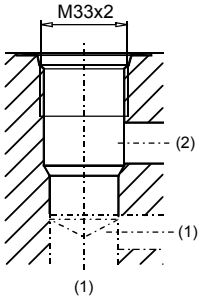


Δp = f (Q) Pressure volume flow characteristics [BA / AB]



Cavity

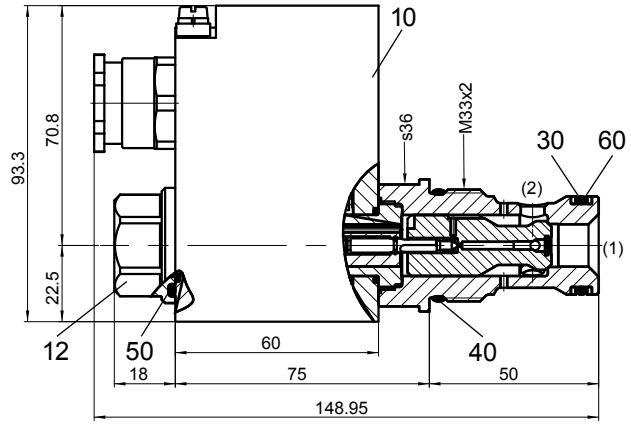
Cavity drawing to
ISO 7789–33–01–0–98



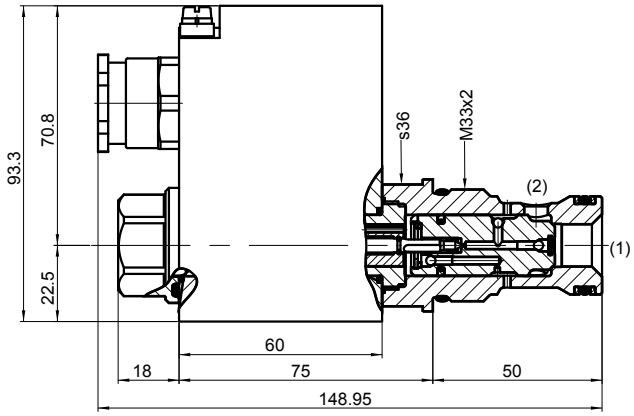
For detailed cavity drawing and
cavity tools see data sheet 2.13-1005

DIMENSIONS / SECTIONAL DRAWING

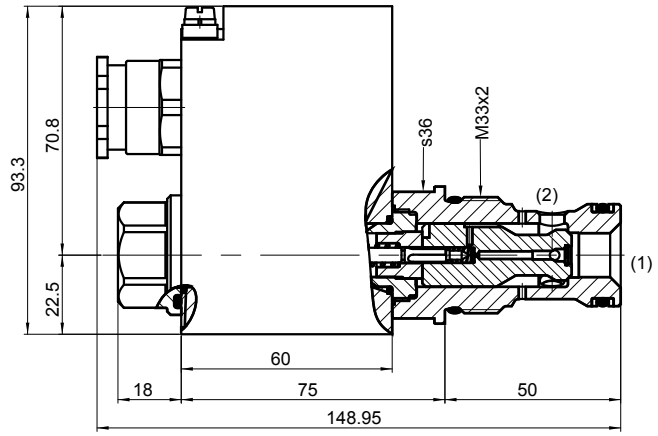
2/2-way version, «normally closed» [BC]



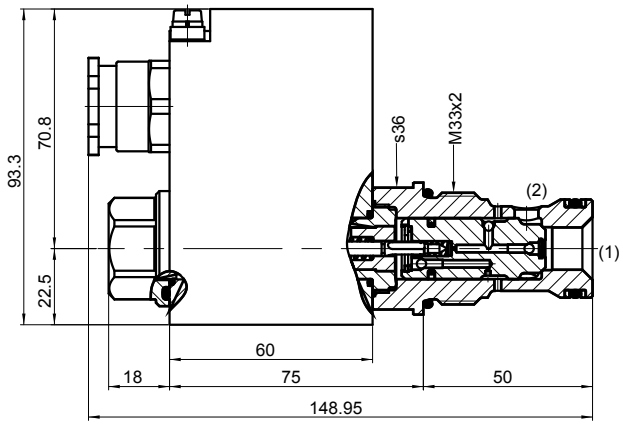
2/2-way version, «normally closed» [BA]



2/2-way version, «normally open» [CB]



2/2-way version, «normally open» [AB]



PARTS LIST

Position	Article	Description
10	263.6...	Coil type MKY 45/18 x 60...
12	154.2603	Knurled nut M18 x 1,5 x 18
30	160.2238 160.6238	O-ring ID 23,81x2,6 (NBR) O-ring ID 23,81x2,62 (FMK)
40	160.2298 160.6296	O-ring ID 29,82x2,62 (NBR) O-ring ID 29,82x2,62 (FMK)
50	160.2251	O-ring ID 25,07x2,62
60	049.3297	Back-up ring RD 24,5x29,1,4

ACCESSORIES

Cartridge built-in in flange- or sandwich body:

Flange valve	register 1.11
Sandwich valve	register 1.11

Technical explanation see data sheet 1.0-100

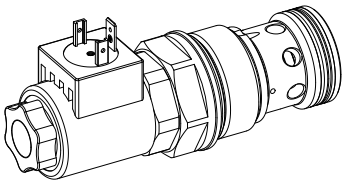
SWITCHING TIME

		Flow direction	under current	Current-free
SVSPM33	**BA**	1 → 2	appr. 30 ms	appr. 100 ms
		2 → 1	appr. 30 ms	appr. 100 ms
	AB	1 → 2	appr. 100 ms	appr. 60 ms
		2 → 1	appr. 100 ms	appr. 80 ms
	CB	2 → 1	appr. 60 ms	appr. 70 ms
	BC	2 → 1	appr. 30 ms	appr. 70 ms

The switching times depend on the volume flow, pressure and viscosity. In case of small volume flows, the switching time can get considerably longer..

Solenoid poppet valve cartridge
2/2-way versions
- **Pilot operated**
- **Q_{max} = 300 l/min**
- **p_{max} = 350 bar**

M42x2
ISO 7789



DESCRIPTION
Pilot operated 2/2-way poppet valve in screw-in cartridge design with thread M42x2 for cavity acc. to ISO 7789. The valve functions „normally open“ and „normally closed“ are available. There are two versions of the slip-on coil. The coils may be exchanged without opening the hydraulic circuit. The outside of the armature tube and the valve body are zinc coated for surface protection.

FUNCTION
In case of the version AB, the valve is closed in the flowing condition, in case of the BA in the non-flowing condition. In this, the differential spool is pressed against the seat by means of a spring and the applied pressure, and it closes free of leakage oil in both directions of flow.

APPLICATION
Wandfluh solenoid operated poppet valves are applied where a leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks.

TYPE CODE

S V S PM42 - [ ] - [ ] / [ ] [ ] - [ ] # [ ]

Poppet valve					
Pilot operated					
Super-solenoid					
Screw-in cartridge M42x2					
Designation see symbols					
Nominal voltage U_N	12 VDC	G12	115 VAC	R115	
	24 VDC	G24	230 VAC	R230	
	without coil	X5			
Slip-on coil	Metal housing round	W			
	Metal housing square	M*			
Connection version					
Connector socket EN 175301-803 / ISO 4400		D			
Connector socket AMP Junior-Timer		J			
Connector Deutsch DT04-2P		G			
Sealing material	NBR				
	FKM (Viton)	D1			
Design-Index (Subject to change)					

* Only available in conjunction with other nominal voltages and connection versions. (See data sheet 1.1-171)

GENERAL SPECIFICATIONS

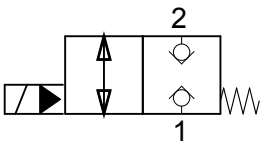
Description	Pilot operated 2/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity acc. to ISO 7789
Operation	Solenoid with exchangable slip-on coil
Mounting	Screw-in thread M42x2
Ambient temperature	-20…+50 °C
Mounting position	any
Fastening torque:	M_D = 100 Nm for cartridge
	$M_{D\,max}$ = 5 Nm for knurled nut
Weight	m = 0,95 kg
Volume flow	see symbols

HYDRAULIC SPECIFICATIONS

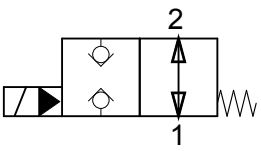
Fluid	Mineral oil, other fluid on request
Contamination	ISO 4406:1999, class 20/18/14
efficiency	(Required filtration grade ß 10...16 ≥ 75)
	(see data sheet 1.0-50/2)
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 350 bar
Max. volume flow	Q_{max} = 300 l/min
Pressure drop	see characteristic
Opening pressure:	
Version AB / BA	2 → 1 = 3,5bar / 1 → 2 = 3 bar

SYMBOLS

SVSPM42 - **BA**…

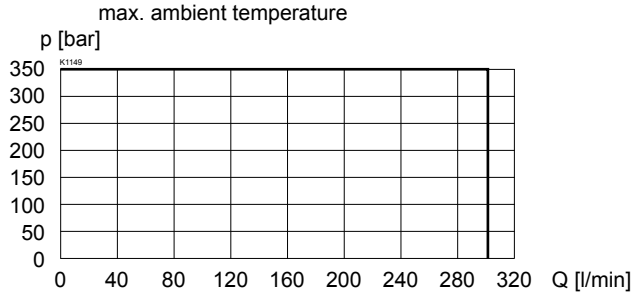


SVSPM42 - **AB**…



CHARACTERISTICS Oil viscosity ν = 30 mm²/s

p = f (Q) Performance limits at 10% under voltage and max. ambient temperature



ELECTRICAL CONTROL

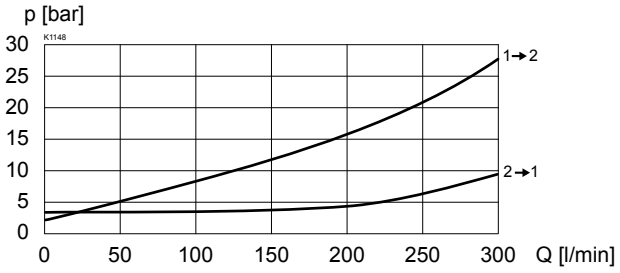
Construction	Switching solenoid, wet pin pull- or push type, pressure tight
Standard nominal voltage:	U_N = 12 VDC, 24 VDC U_N = 115 VAC∗, 230 VAC∗ AC = 50 bis 60 Hz

– ∗ Rectifier integrated in connector socket
– Other nominal voltages and wattages on request

Voltage tolerance	±10 % of nominal voltage
Protection class acc. EN 60 529	Connection version D: IP 65 J: IP 66 G: IP 67 and 69 K
Relative duty cycle	100 % DF (see data sheet 1.1-430)
Switching cycles	5'000 /h
Operating life	10^7 (number of switching cycles, theoretically)
Connections/Power supply	Versions see type code

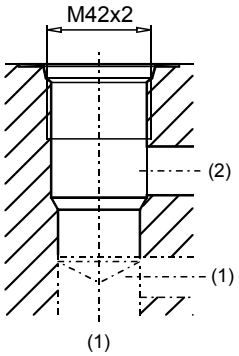
For further electrical specifications see data sheet 1.1-169 (W)
1.1-171 (M)

Δp = f (Q) Pressure volume flow characteristics



CAVITY

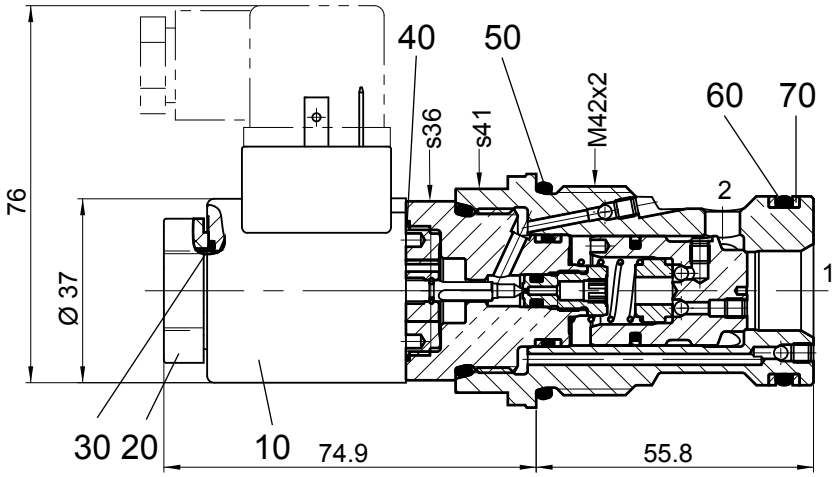
Cavity drawing to
ISO 7789–42–01–0–07



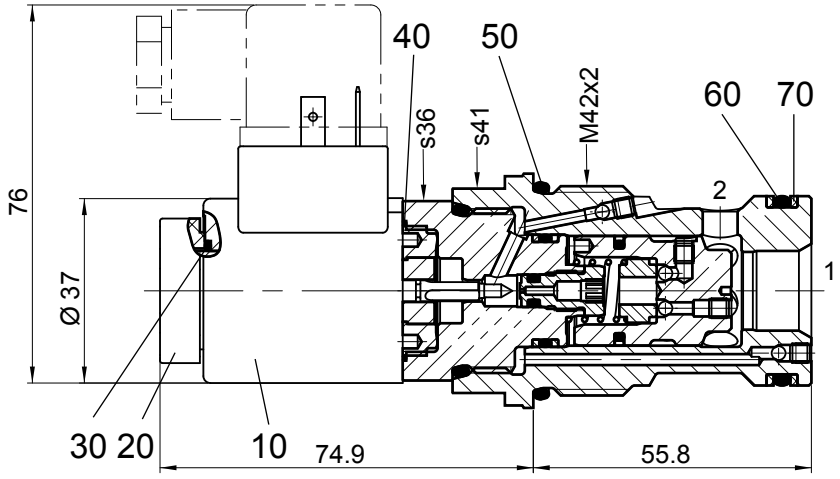
For detailed cavity drawing and
cavity tools see data sheet 2.13-1050

DIMENSIONS / SECTIONAL DRAWING

2/2-way version, «normally closed» [BA]



2/2-way version, «normally open» [AB]



PARTS LIST

Position	Article	Description
		EN 175301
10	206.2213	Solenoid coil WDE37/16x40-G24
	206.2212	Solenoid coil WDE37/16x40-G12
		Junior-Timer
	206.2218	Solenoid coil WJE 37/16x40-G24
	206.2217	Solenoid coil WJE 37/16x40-G12
		Deutsch
	206.2220	Solenoid coil WGE37/16x40-G24
	206.2219	Solenoid coil WGE37/16x40-G12
20	154.2600	Knurled nut
30	160.2156	O-ring ID 15,60x1,78 (NBR)
40	160.1260	O-ring ID 26,00x1,00 (NBR)
50	160.2393	O-ring ID 39,34x2,62 (NBR)
	160.6393	O-ring ID 39,34x2,62 (FMK)
60	160.2329	O-ring ID 32,99x2,62 (NBR)
	160.6325	O-ring ID 32,99x2,62 (FMK)
70	049.3384	Stützring RD 33,5x38x1,4

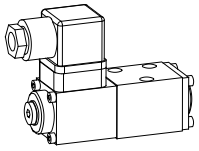
ACCESSORIES

Mating connector EN 175301-803 — Article no. 219.2002

Technical explanation see data sheet — 1.0-100

Solenoid poppet valve
- **2/2-, 3/2- and 3/4-way construction**
- **Q_{max} = 6 l/min**
- **p_{max} = 350 bar**

NG3-Mini®



DESCRIPTION

Poppet valve, flanged design NG3-Mini, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppoet valves in the NG3-Mini series is the poppet valve cartridge NG3. See data sheet 1.11-2010. The solenoids correspond to VDE standard 0580.
Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time. NG3-mini valves are used where a light, compact unit is needed.

CONTENT

TYPE CODE

2/2- or 3/2-way construction	B	☐	☐	2	03	☐	-	☐	#	☐
3/4-way construction	B	☐	3	4	03		-	☐	#	☐

Interface acc. to Wandfluh standard
Medium-solenoid [M]
Super-solenoid [S]
2-way (connections) [2]
3-way (connections) [3]
2 position
4 position
Nominal size, 3-Mini
Normally closed — solenoid on A-side [1a]
Normally open — solenoid on B-side [0b]
Nominal voltage U_N: 12VDC [G12], 24VDC [G24], 110VAC [R110], 115VAC [R115], 230VAC [R230]
Design-Index (Subject to change)

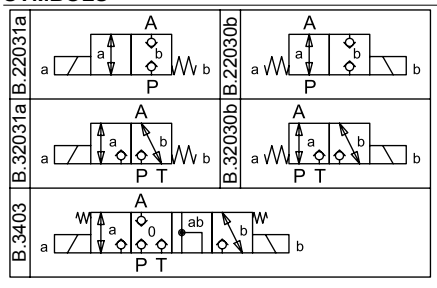
ELECTRICAL CONTROL

Construction	Solenoid, wet pin push, pressure tight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request.
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection / Power supply	Overdevice plug connection to ISO 4400 / DIN 43650, (2P+E), other connections on request
Solenoid:	– Medium SIN29V (data sheet 1.1-80) – Super SIS29V (data sheet 1.1-85)

HYDRAULIC SPECIFICATIONS

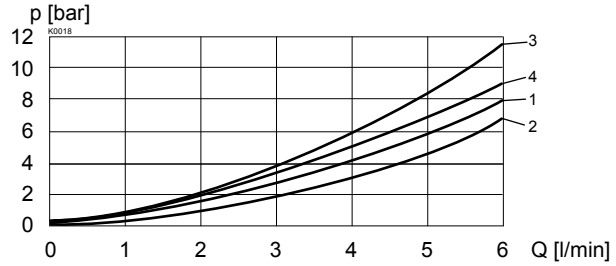
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 125 bar Super: p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 6 l/min see characteristics

SYMBOLS



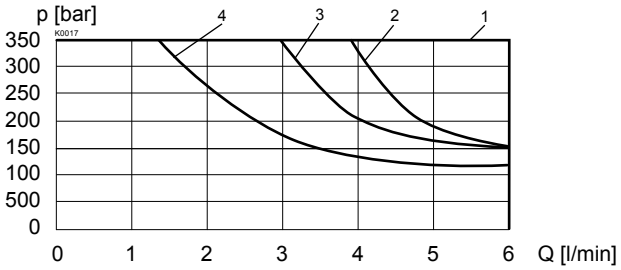
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

$\Delta p = f(Q)$ Pressure loss / flow characteristics



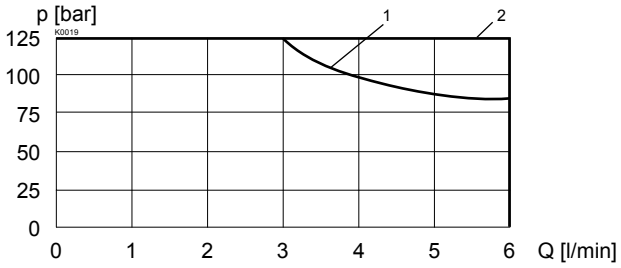
	Flow direction			
Type	P - A	A - T	A - P	T - A
B.2203..	1	-	2	-
B.3203..	3	4	4	3
B.3403	1	1	2	2

$p = f(Q)$ Perfomance limits
with standard voltage -10%
Super



	Flow direction			
Type	P - A	A - T	A - P	T - A
BS22031a	1	-	2	-
BS22030b	1	-	3	-
BS32031a	1	2	4	1
BS32030b	1	2	4	1
BS3403	1	1	2	4

$p = f(Q)$ Performance limits
with standard voltage -10%
1 = 3/2 way valve flow direction from A --> P
2 = all other valves and flow directions
Medium



PARTS LIST

Position	Article	Description
10	260.2… 260.3…	Medium-solenoid SIN29V Super-solenoid SIS29V
20	239.2033	Plug (incl. seal ring) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug A (grey)
40	056.4203	Cover
50	246.0141	Socket head cap screw M3 x 40 DIN 912
60	246.0109	Socket head cap screw M3 x 8 DIN 912
70	160.2045	O-ring ID 4,50 x 1,50

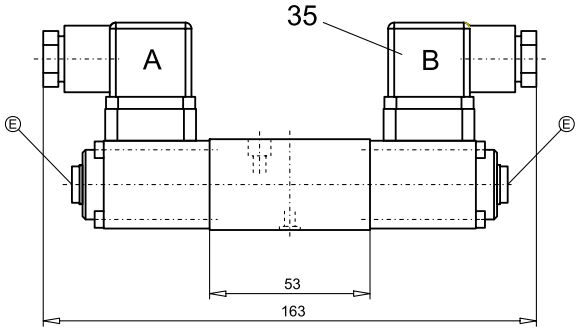
ACCESSORIES

Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

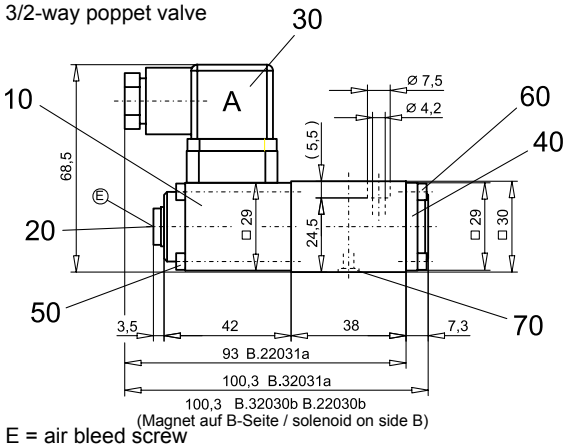
Technical explanation see data sheet 1.0-100

DIMENSIONS

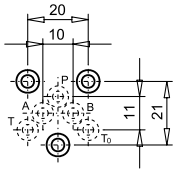
3/4-way poppet valve



2/2-way poppet valve
3/2-way poppet valve

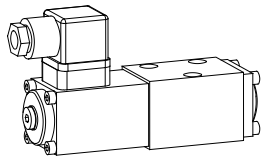


E = air bleed screw



Solenoid poppet valve
- **2/2-, 3/2- and 3/4-way construction**
- **Q_{max} = 15 l/min**
- **p_{max} = 350 bar**

NG4-Mini®



DESCRIPTION

Poppet valve, flanged design NG4-Mini according to Wandfluh standard, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppoet valves in the NG4-Mini series is the poppet valve cartridge NG4. See data sheet 1.11-2020. The solenoids correspond to VDE standard 0580.

Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time. NG4-mini valves are used where a light, compact unit is needed.

TYPE CODE

2/2- or 3/2-way construction	B	☐	☐	2	04	☐	-	☐	#	☐
3/4-way construction	B	☐	3	4	04		-	☐	#	☐

Interface acc. to Wandfluh standard

Medium-solenoid	M			
Super-solenoid	S			
2-way (connections)	2			
3-way (connections)	3			
2 position				
4 position				
Nominal size 4-Mini				
Normally closed	solenoid on A-side			1a
Normally open	solenoid on B-side			0b
Nominal voltage U_N	12 VDC	G12	110 VAC	R110
	24 VDC	G24	115 VAC	R115
			230 VAC	R230

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG4-Mini acc. to Wandfluh standard
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Flange, 3 holes for socket cap screws M5x40
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 5,5 Nm (quality 8.8)
Weight 2/2-, 3/2-way	m = 0,95 kg
3/4-way	m = 1,45 kg
Volume flow direction	any (see characteristics)

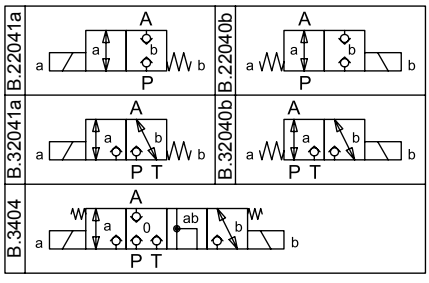
ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure hight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 bis 60 Hz ∗Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection / Power supply	Over device plug connection to ISO 4400 / DIN 43 650, (2P+E), other connections on request
Solenoid:	– Medium SIN35V (data sheet 1.1-105) – Super SIS35V (data sheet 1.1-110)

HYDRAULIC SPECIFICATIONS

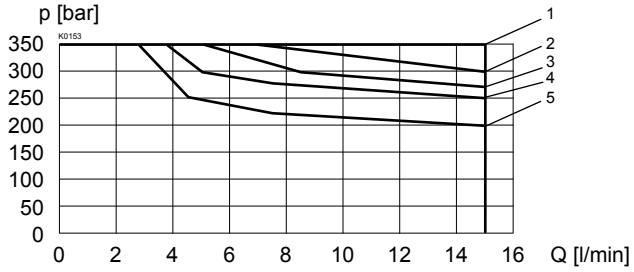
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 15 l/min see characteristics

SYMBOLS



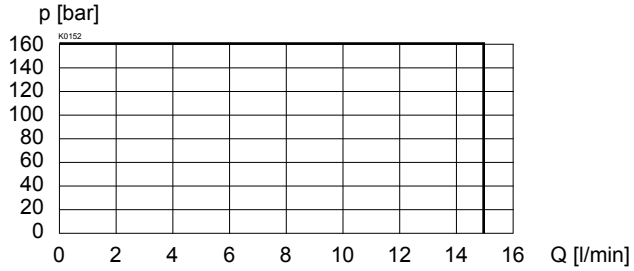
CHARACTERISTICS Oilviscosity υ = 30 mm²/s

p = f (Q) Performance limit
with standard voltage -10%
Super

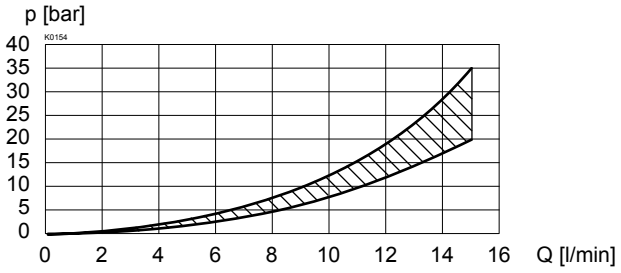


Type	Flow direction			
	P - A	A - T	A - P	T - A
BS22041a	1	-	2	-
BS22040b	1	-	4	-
BS32041a	1	3	5	1
BS32040b	1	4	5	1
BS3404	1	1	2	2

p = f (Q) Performance limit
with standard voltage -10%
Medium



Δp = f (Q) Pressure loss/flow characteristics



DIMENSIONS

3/4-way poppet valve

2/2-way poppet valve
3/2-way poppet valve

E = air bleed screw

PARTS LIST

Position	Article	Description
10	260.4… 260.5…	Medium-solenoid SIN35V Super-solenoid SIS35V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	057.4201	Cover
50	246.1161	Socket head cap screw M4 x 60 DIN 912
60	246.1113	Socket head cap screw M4 x 12 DIN 912
70	160.2052	O-ring ID 5,28 x 1,78

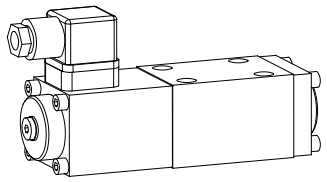
ACCESSORIES

Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve
- **2/2-, 3/2- and 3/4-way construction**
- **Q_{max} = 40 l/min**
- **p_{max} = 350 bar**

NG6
ISO 4401-03



DESCRIPTION
Poppet valve, flanged design NG6, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppoet valves in the NG6 series is the poppet valve cartridge NG6. See data sheet 1.11-2030. The solenoids correspond to VDE standard 0580.
Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION
The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

TYPE CODE

2/2- or 3/2-way construction			A	☐	☐	2	06	☐	-	☐	# ☐
3/4-way construction			A	☐	3	4	06		-	☐	# ☐
International mounting interface ISO											
Medium-solenoid	M										
Super-solenoid	S										
2-way (connections)	2										
3-way (connections)	3										
2 position											
4 position											
Nominal size 6											
Normally closed	solenoid on A-side						1a				
Normally open	solenoid on B-side						0b				
Nominal voltage U_N:	12 VDC	G12	110 VAC				R110				
	24 VDC	G24	115 VAC				R115				
			230 VAC				R230				
Design-Index (Subject to change)											

GENERAL SPECIFICATIONS

Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG6 acc. to ISO 4401-03
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Flange, 4 holes for socket cap screws M5 x 45
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preverable horizontal
Fastening torque	M_D = 5,5 Nm (quality 8.8)
Weight 2/2-, 3/2-way	m = 1,8 kg
3/4-way	m = 2,8 kg
Volume flow direction	any (see characteristics)

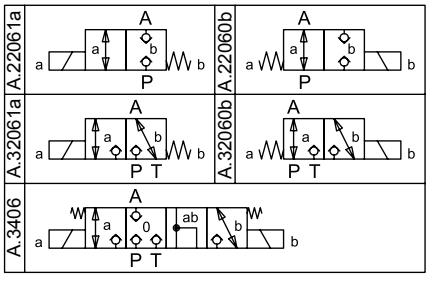
ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure hight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection / Power supply	Over device plug connection to ISO 4400 / DIN 43 650, (2P+E), other connections on request
Solenoid:	– Medium SIN45V (1.1-120) – Super SIS45V (1.1-125)

HYDRAULIC SPECIFICATIONS

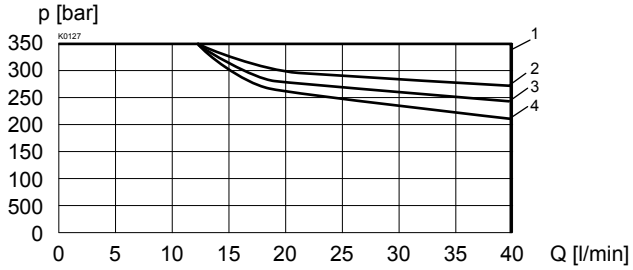
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 40 l/min see characteristics

SYMBOLS



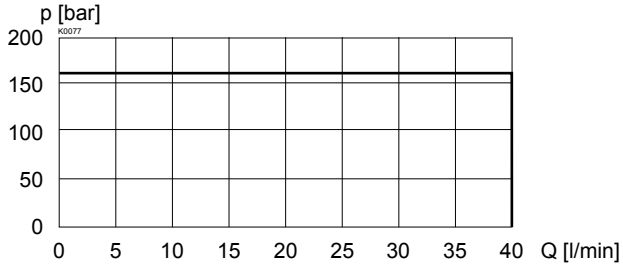
CHARACTERISTICS Oilviscosity υ = 30 mm²/s

p = f (Q) Performance limit
with standard voltage -10%
Super

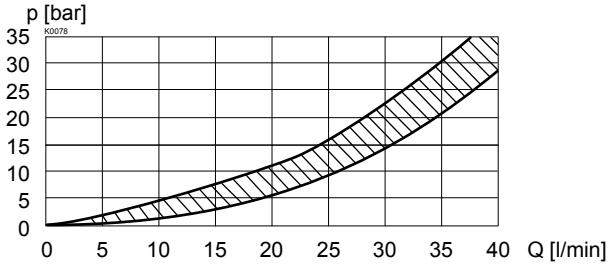


Type	Flow direction			
	P - A	A - T	A - P	T - A
AS22061a	1	-	2	-
AS22060b	1	-	4	-
AS32061a	1	2	3	1
AS32060b	1	2	3	1
AS3406	1	1	2	2

p = f (Q) Performance limit
with standard voltage -10%
Medium

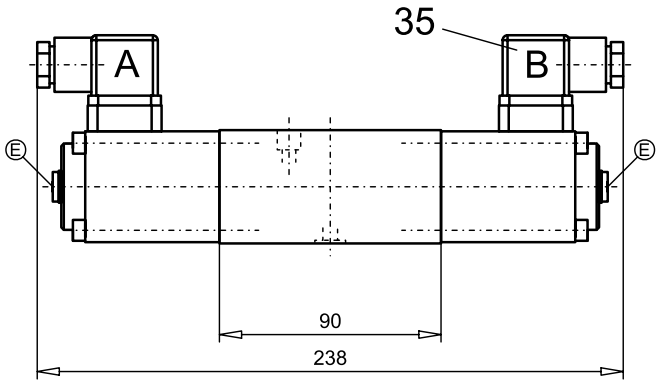


Δp = f (Q) Pressure loss/flow characteristics



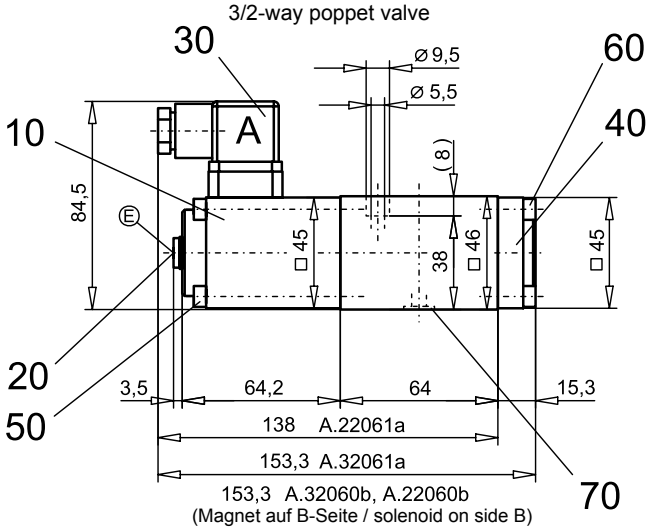
DIMENSIONS

3/4-way poppet valve



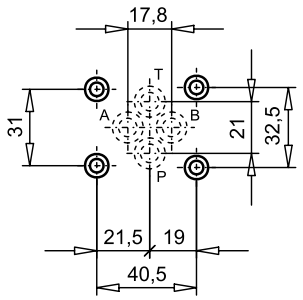
E = air bleed screw

2/2-way poppet valve
3/2-way poppet valve



PARTS LIST

Position	Article	Description
10	260.6… 260.7…	Medium-solenoid SIN45V Super-solenoid SIS45V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	058.4215	Cover
50	246.2160	Socket head cap screw M5 x 60 DIN 912
60	246.2117	Socket head cap screw M5 x 16 DIN 912
70	160.2093	O-ring ID 9,25 x 1,78



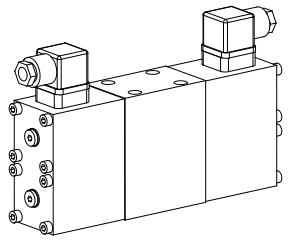
ACCESSORIES

Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve
- **4/3-way construction**
- **Q_{max} = 40 l/min**
- **p_{max} = 350 bar**

NG6
ISO 4401-03



DESCRIPTION
Poppet valve, flanged design NG6 to ISO 4401-03. The central functioning element of all directly controlled poppet valves in the NG6 series is the poppet valve cartridge NG6. See data sheet 1.11-2030. The solenoids correspond to VDE standard 0580.
Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION
The poppet valve is opened by wet pin push type solenoids and closed by springs. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

TYPE CODE

4/3-way construction					A ☐ 4 3 06 - ☐ # ☐
International mounting interface ISO					
Medium-solenoid	M				
Super-solenoid	S				
4-way (connections)					
3 position					
Nominal size 6					
Nominal voltage U_N	12 VDC	G12	110 VAC	R110	
	24 VDC	G24	115 VAC	R115	
			230 VAC	R230	
Design-Index (Subject to change)					

GENERAL SPECIFICATIONS

Description	4/3-way poppet valve
Nominal size	NG6 acc. to ISO 4401-03
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Flange, 4 holes for socket cap screws M5 x 90
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 9,7 Nm (quality 12.9)
Weight	m = 5,4 kg

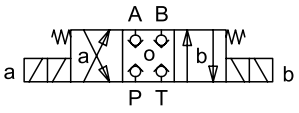
ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Over device plug connection to ISO 4400 / DIN 43 650, (2P+E), other connections on request
Solenoid:	– Medium SIN45DV (1.1-122) – Super SIS45DV (1.1-127)

HYDRAULIC SPECIFICATIONS

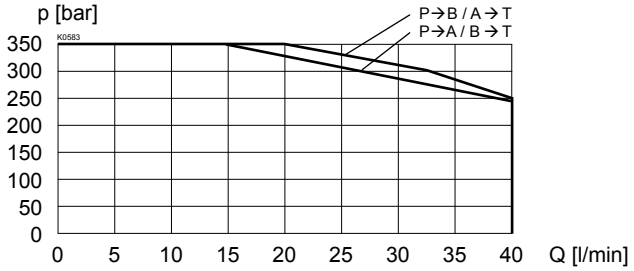
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 40 l/min see characteristics

SYMBOLS

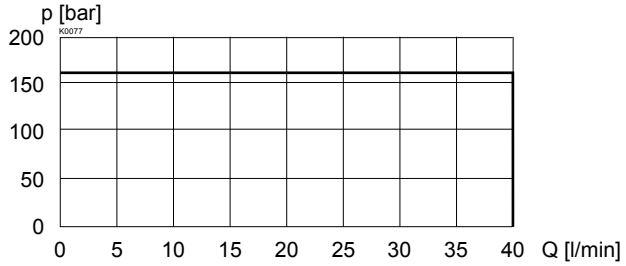


CHARACTERISTICS Oil viscosity υ = 30 mm²/s

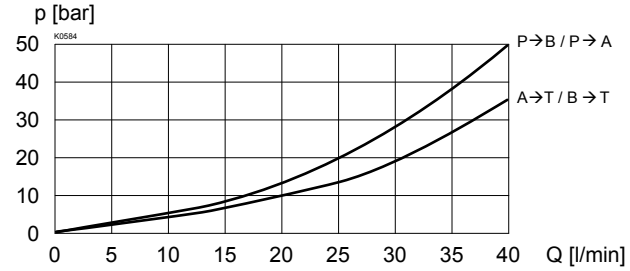
p = f (Q) Performance limit
with standard voltage -10%
Super



p = f (Q) Performance limit
with standard voltage -10%%
Medium

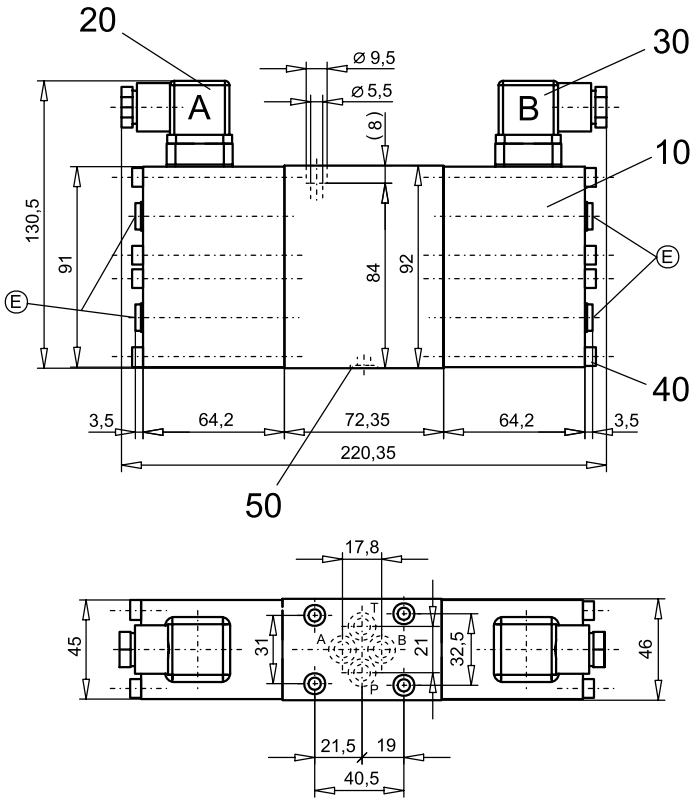


Δp = f (Q) Pressure loss/flow characteristics



DIMENSIONS

4/3-way poppet valve



PARTS LIST

Position	Article	Description
10	260.6... 260.7...	Medium solenoid SIN45DV-....-M40-HB0 Super solenoid SIS45DV-...-M40-HB0
20	219.2001	Plug A (grey)
30	219.2002	Plug B (black)
40	246.2171	Cyl. screw M5x70 DIN 912
50	160.2093	O-ring ID 9,25x1,78

E = air bleed screw

ACCESSORIES

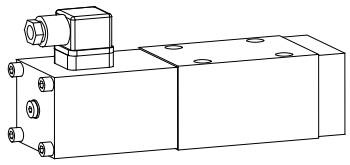
Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve

- 2/2-, 3/2- and 3/4-way construction
- Q_{max} = 80 l/min
- p_{max} = 350 bar

NG10
ISO 4401-05



DESCRIPTION

Poppet valve, flanged design NG10, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG10 series is the poppet valve cartridge NG10. See data sheet 1.11-2040. The solenoids correspond to VDE standard 0580.
Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION

The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time. NG10 valves are used where a light, compact unit is needed.

TYPE CODE

2/2- or 3/2-way construction	A	☐	☐	2	10	☐	-	☐	#	☐
3/4-way construction	A	☐	3	4	10		-	☐	#	☐

International mounting interface ISO

Medium-solenoid	M			
Super-solenoid	S			
2-way (connections)	2			
3-way (connections)	3			
2 position				
4 position				
Nominal size 10				
Normally closed	solenoid on A-side			1a
Normally open	solenoid on B-side			0b
Nominal voltage U_N	12 VDC	G12	110 VAC	R110
	24 VDC	G24	115 VAC	R115
			230 VAC	R230

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG10 acc. to ISO 4401-05
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Flange, 4 holes for socket cap screws M6 x 65
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 9,5 Nm (quality 8.8)
Weight 2/2-, 3/2-way	m = 4,6 kg
3/4-way	m = 6,4 kg
Volume flow direction	any (see characteristics)

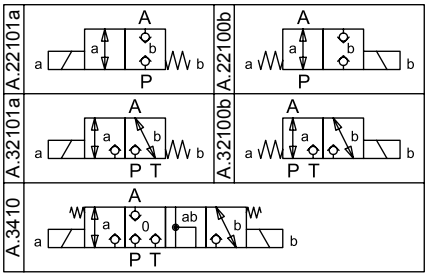
ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% FD (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection / Power supply	Over device plug connection to ISO 4400 / DIN 43 650, (2P+E), other connections on request
Solenoid:	– Medium SIN60V (dataasheet 1.1-145) – Super SIS60V (data sheet 1.1-150)

HYDRAULIC SPECIFICATIONS

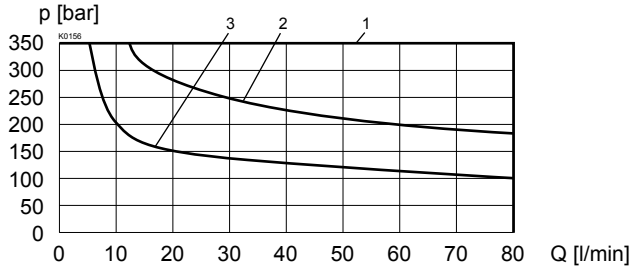
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 80 l/min see characteristics

SYMBOLS



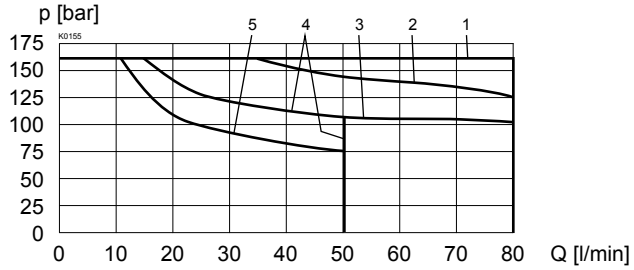
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit
with standard voltage -10%
Super



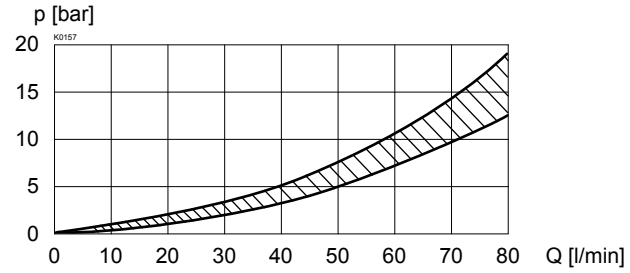
Type	Flow direction			
	P - A	A - T	A - P	T - A
AS22101a	1	-	2	-
AS22100b	1	-	2	-
AS32101a	1	2	3	1
AS32100b	1	2	3	1
AS3410	1	1	2	2

p = f (Q) Performance limit
with standard voltage -10%
Medium



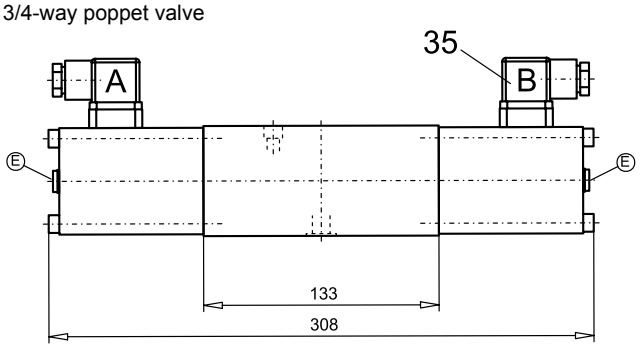
Type	Flow direction			
	P - A	A - T	A - P	T - A
AM22101a	1	-	4	-
AM22100b	1	-	2	-
AM32101a	1	3	5	1
AM32100b	1	3	3	1
AM3410	1	1	4	4

Δp = f (Q) Pressure loss/flow characteristics

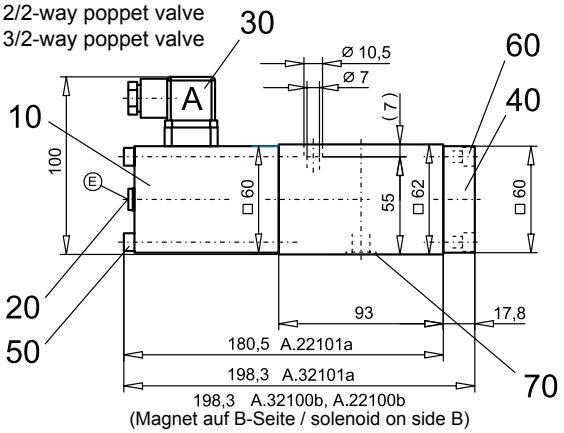


DIMENSIONS

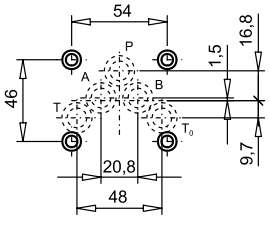
3/4-way poppet valve



2/2-way poppet valve
3/2-way poppet valve



E = air bleed screw



PARTS LIST

Position	Article	Description
10	260.8… 260.9…	Medium-solenoid SIN60V Super-solenoid SIS60V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	059.2200	Cover
50	246.3190	Socket head cap screw M6 x 90 DIN 912
60	246.3121	Socket head cap screw M6 x 20 DIN 912
70	160.2140	O-ring ID 14,00 x 1,78

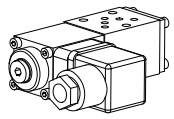
ACCESSORIES

Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve
- **2/2-way sandwich construction**
- **Q_{max} = 6 l/min**
- **p_{max} = 350 bar**

NG3-Mini®



DESCRIPTION
Poppet valve, sandwich design NG3-Mini according to Wandfluh standard, available as a 2/2-way valve normally open or closed. The central functioning element of all directly controlled poppet valves in the NG3 series is the poppet valve cartridge NG3. See data sheet 1.11-2010. The solenoids correspond to VDE stand-ard 0580.
Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION
The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. NG3-mini valves are used where a light, compact unit is needed.

TYPE CODE

Z ☐ 2 2 03 ☐ ☐ - ☐ # ☐

- Poppet valve, construction sandwich
- Medium-solenoid M / Super-solenoid S
- 2-way (connections)
- 2 positions
- Nominal size 3-Mini
- Normally closed 1 / Normally open 0
- Type list / function Poppet valve: in P P; in T T; in A and B AB; in A A; in B B
- Nominal voltage U_N: 12 VDC G12; 24 VDC G24; 110 VAC R110; 115 VAC R115; 230 VAC R230
- Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG3-Mini acc. to Wandfluh standard
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Sandwich constr., 3 mounting holes for socket head screws or locking screws M4
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 2,8 Nm (quality 8.8)
Masse poppet valve in:	
A, B, P or T	m = 0,46 kg
A and B normally closed.	m = 0,56 kg
A and B normally open	m = 0,62 kg
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

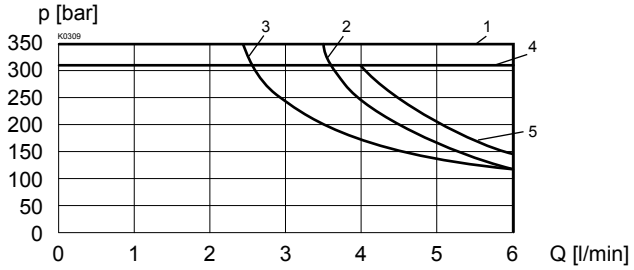
Fluid	Mineral oil, other fluid on request	
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2	
Viscosity range	12 mm²/s… 320 mm²/s	
Fluid temperature	-20…+70 °C	
Working pressure	Medium:	p_{max} = 125 bar
	Super:	p_{max} = 350 bar
	to ZS22030AB	p_{max} = 315 bar
Max. volume flow	$Q_{max.}$ = 6 l/min see characteristics	

ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Over device plug connection to ISO 4400/DIN 43650, (2P+E), other connections on request
Solenoid:	– Medium SIN29V (1.1-80) – Super SIS29V (1.1-85)

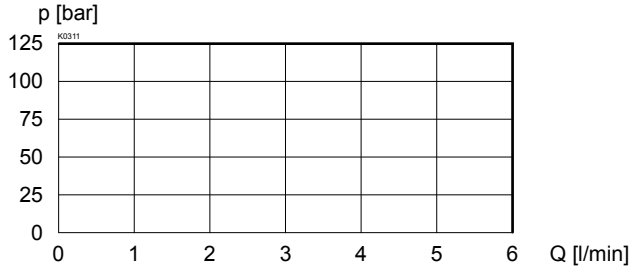
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit with standard voltage -10%
Super

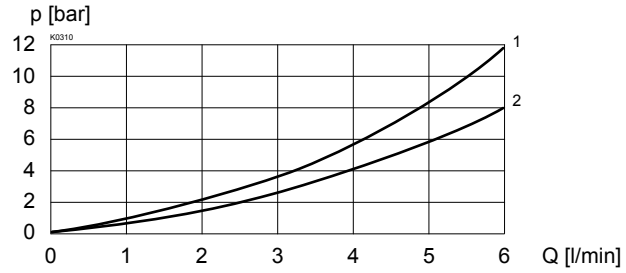


Type	Flow direction 1 → 2	Flow direction 2 → 1
ZS22031P	1	2
ZS22031T	1	2
ZS22031A	1	2
ZS22031B	1	2
ZS22031AB	1	2
ZS22030P	1	3
ZS22030T	1	3
ZS22030A	1	3
ZS22030B	1	3
ZS22030AB	4	5

p = f (Q) Performance limit with standard voltage -10%
Medium

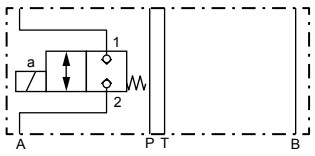


Δp = f (Q) Pressure loss/flow characteristics
1: characteristics from Z.22030AB
2: characteristics from all valves

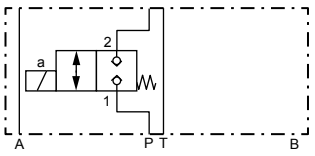


TYPE CHARTS

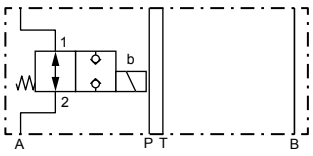
Z.22031A



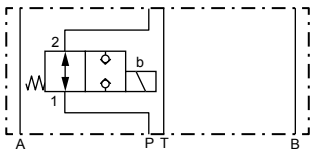
Z.22031P



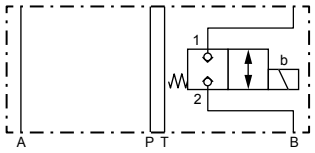
Z.22030A



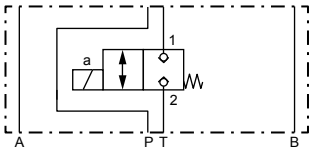
Z.22030P



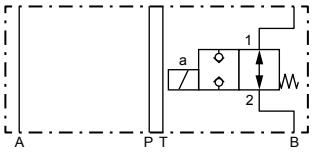
Z.22031B



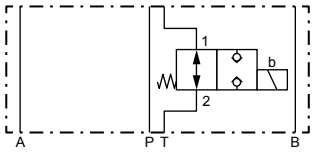
Z.22031T



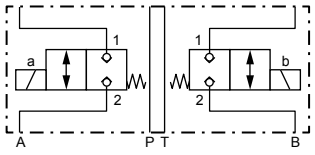
Z.22030B



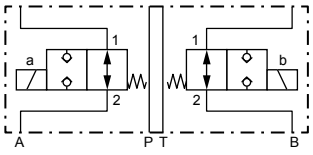
Z.22030T



Z.22031AB

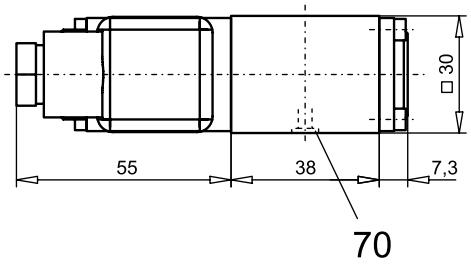


Z.22030AB

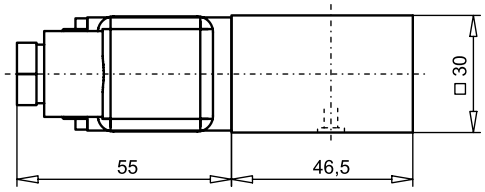


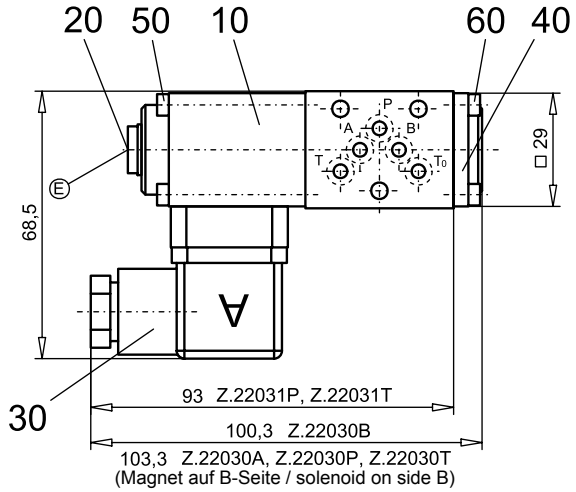
DIMENSIONS

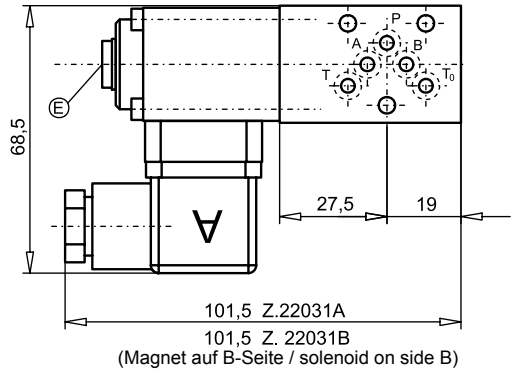
Poppet valve in A, B, P or T normally open
Poppet valve in P or T normally closed



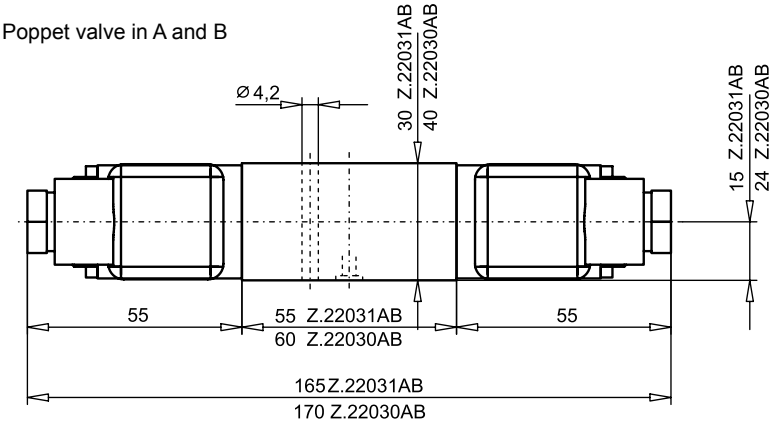
Poppet valve in A or B normally closed

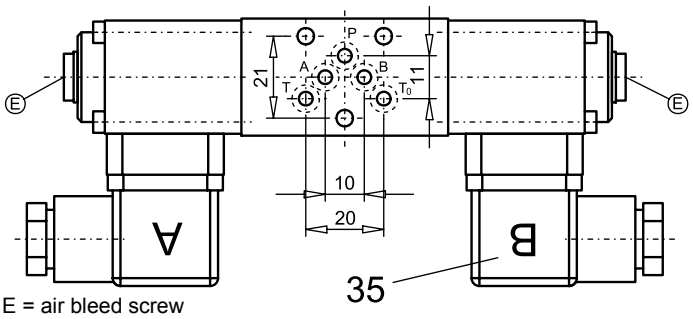






Poppet valve in A and B





E = air bleed screw

PARTS LIST

Position	Article	Description
10	260.2… 260.3…	Medium-solenoid SIN29V Super-solenoid SIS29V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug A (grey)
40	056.4203	Cover
50	246.0141	Socket head cap screw M3x40 DIN 912
60	246.0109	Socket head cap screw M3x8 DIN 912
70	160.2045	O-ring ID 4,50x1,50

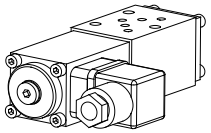
ACCESSORIES

Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve
- **2/2-way sandwich construction**
- **Q_{max} = 15 l/min**
- **p_{max} = 350 bar**

NG4-Mini®



DESCRIPTION
Poppet valve, sandwich design NG4-Mini according to Wandfluh standard, available as a 2/2-way valve normally open or closed. The central functioning element of all directly controlled poppet valves in the NG4 series is the poppet valve cartridge NG4. See data sheet 1.11-2020. The solenoids correspond to VDE standard 0580.
Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION
The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. NG4-Mini valves are used where a light, compact unit is needed.

TYPE CODE

Z ☐ 2 2 04 ☐ ☐ - ☐ # ☐

- Poppet valve, construction sandwich
- Medium-solenoid M / Super-solenoid S
- 2-way (connections)
- 2 positions
- Nominal size 4-Mini
- Normally closed 1 / Normally open 0
- Type list / function Poppet valve: in P P, in T T, in A and B AB, in A A, in B B
- Nominal voltage U_N: 12 VDC G12, 24 VDC G24, 110 VAC R110, 115 VAC R115, 230 VAC R230
- Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG4-Mini to Wandfluh standard
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Sandwich Constr., 3 mounting holes for socket head screws or locking screws M5
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 5,5 Nm (quality 8.8)
Masse poppet valve in:	
A, B, P or T	m = 0,95 kg
A and B normally closed	m = 1,45 kg
A and B normally open	m = 1,85 kg
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

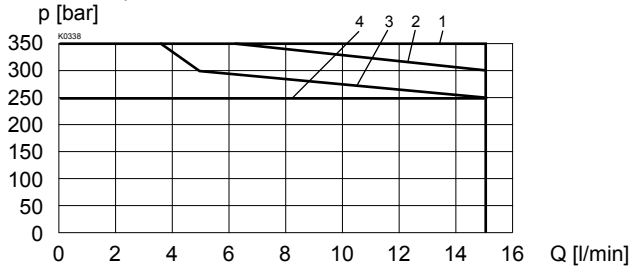
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar to ZS220404AB p_{max} = 250 bar
Max. volume flow	$Q_{max.}$ = 15 l/min see characteristics

ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Over device plug connection to ISO 4400 / DIN 43 650, (2P+E), other connections on request
Solenoid:	– Medium SIN35V (1.1-105) – Super SIS35V (1.1-110)

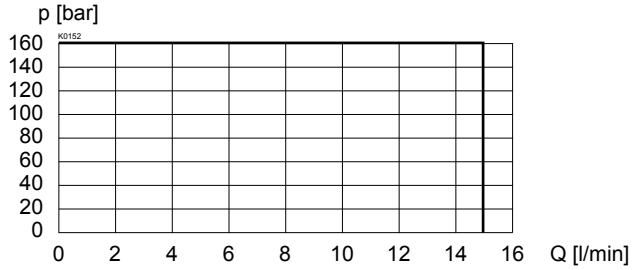
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit with standard voltage -10% Super

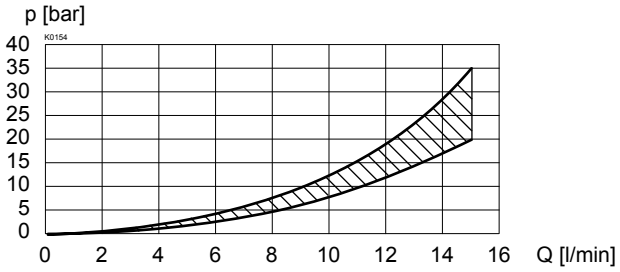


Type	Flow direction 1 → 2	Flow direction 2 → 1
ZS22041P	1	2
ZS22041T	1	2
ZS22041A	1	2
ZS22041B	1	2
ZS22041AB	1	2
ZS22040P	1	3
ZS22040T	1	3
ZS22040A	1	3
ZS22040B	1	3
ZS22040AB	4	4

p = f (Q) Performance limit with standard voltage -10% Medium

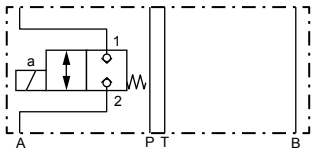


Δp = f (Q) Pressure loss / flow characteristics

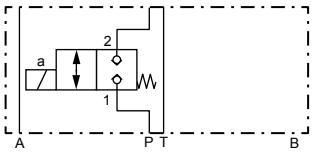


TYPE CHARTS

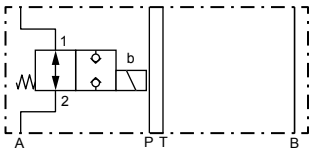
Z.22041A



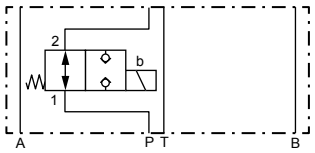
Z.22041P



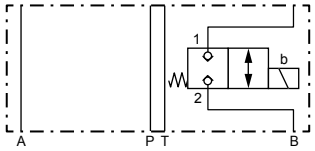
Z.22040A



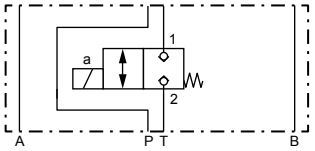
Z.22040P



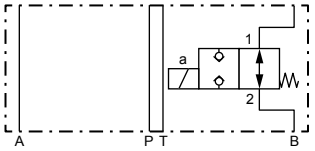
Z.22041B



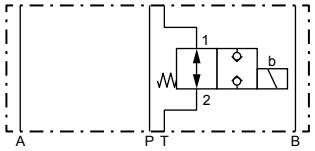
Z.22041T



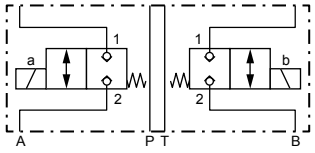
Z.22040B



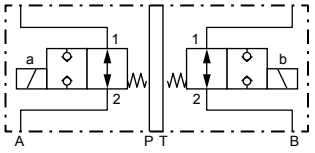
Z.22040T



Z.22041AB

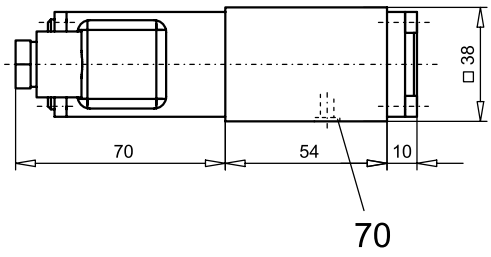


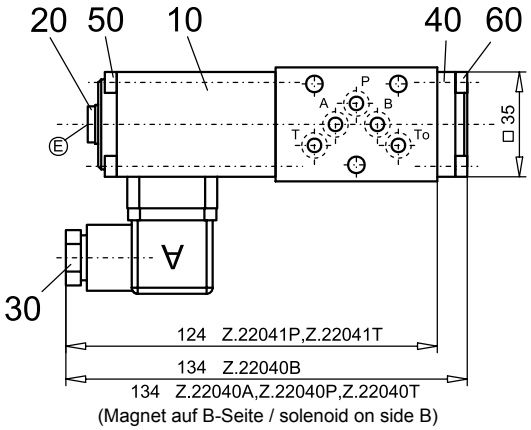
Z.22040AB



DIMENSIONS

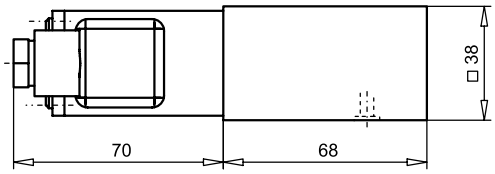
Poppet valve in A, B, P or T normally open
Poppet valve in P or T normally closed

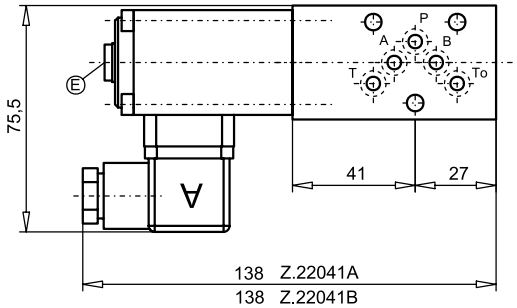




(Magnet auf B-Seite / solenoid on side B)

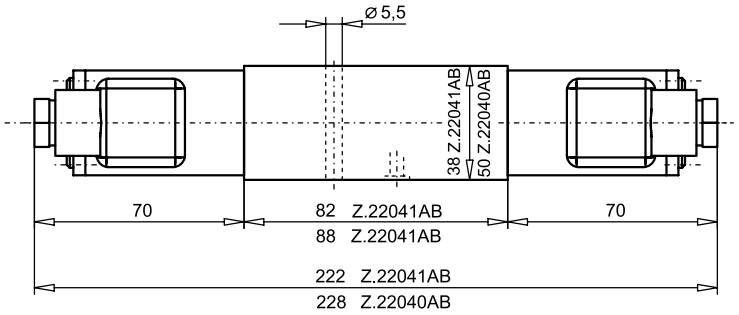
Poppet valve in A or B normally closed

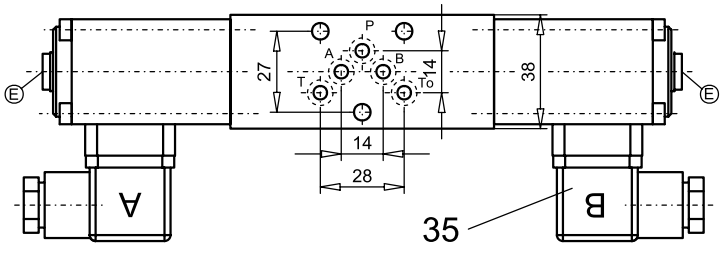




(Magnet auf B-Seite / solenoid on side B)

Poppet valve in A and B





E = air bleed screw

PARTS LIST

Position	Article	Description
10	260.4… 260.5…	Medium-solenoid SIN35V Super-solenoid SIS35V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	057.4201	Cover
50	246.1161	Socket head cap screw M4x60 DIN 912
60	246.1113	Socket head cap screw M4x12 DIN 912
70	160.2052	O-ring ID 5,28x1,78

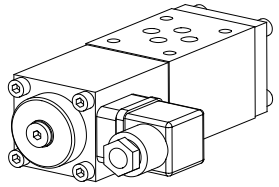
ACCESSORIES

Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve
- **2/2-way sandwich construction**
- **Q_{max} = 40 l/min**
- **p_{max} = 350 bar**

NG6
ISO 4401-03



DESCRIPTION
Poppet valve, sandwich design NG6, available as a 2/2-way valve normally open or closed. The central functioning element of all directly controlled poppet valves in the NG6 series is the poppet valve cartridge NG6. See data sheet 1.11-2030. The solenoids correspond to VDE standard 0580.
Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION
The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform.

TYPE CODE

Z ☐ 2 2 06 ☐ ☐ - ☐ # ☐

Poppet valve, construction sandwich						
Medium-solenoid	M					
Super-solenoid	S					
2-way (connections)						
2 positions						
Nominal size 6						
Normally closed	1					
Normally open	0					
Type list / function Poppet valve	in P	P	in T	T		
	in A and B	AB	in A	A	in B	B
Nominal voltage U_N	12 VDC	G12	110 VAC	R110		
	24 VDC	G24	115 VAC	R115		
			230 VAC	R230		
Design-Index (Subject to change)						

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG6 acc. to ISO 4401-03
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Sandwich constr., 4 mounting holes for socket head screws or locking screws M5
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 5,5 Nm (Quality 8.8)
Masse poppet valve in:	
A, B, P or T	m = 1,8 kg
A and B normally closed.	m = 2,8 kg
A and B normally open	m = 3,3 kg
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

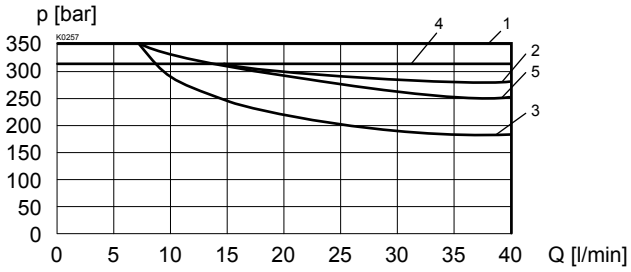
Fluid	Mineral oil, other fluid on request	
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2	
Viscosity range	12 mm²/s…320 mm²/s	
Fluid temperature	-20…+70 °C	
Working pressure	Medium:	p_{max} = 160 bar
	Super:	p_{max} = 350 bar
	to ZS22060AB	p_{max} = 315 bar
Max. volume flow	$Q_{max.}$ = 40 l/min see characteristics	

ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Over device plug connection to ISO 4400/DIN 43 650, (2P+E), other connections on request
Solenoid:	– Medium SIN45V (1.1-120) – Super SIS45V (1.1-125)

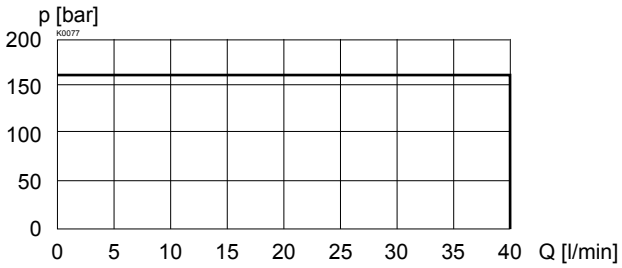
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit with standard voltage -10% Super

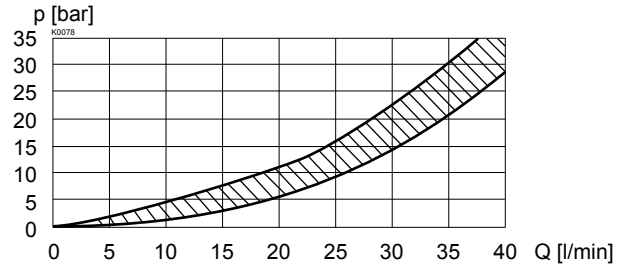


Type	Flow direction 1 → 2	Flow direction 2 → 1
ZS22061P	1	2
ZS22061T	1	2
ZS22061A	1	2
ZS22061B	1	2
ZS22061AB	1	2
ZS22060P	1	3
ZS22060T	1	3
ZS22060A	1	3
ZS22060B	1	3
ZS22060AB	4	5

p = f (Q) Performance limit with standard voltage -10% Medium

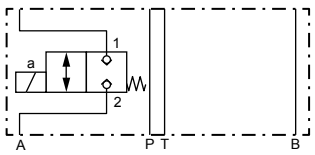


Δp = f (Q) Pressure loss/flow characteristics

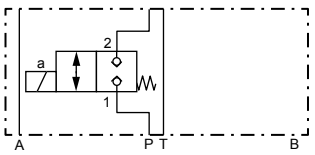


TYPE CHARTS

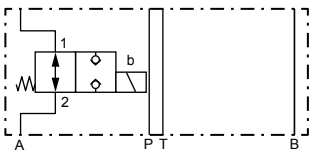
Z.22061A



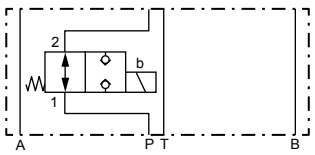
Z.22061P



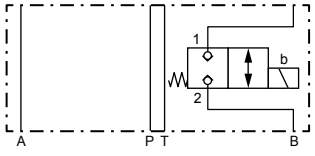
Z.22060A



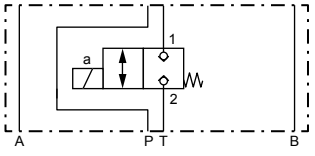
Z.22060P



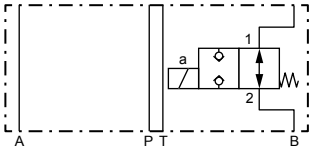
Z.22061B



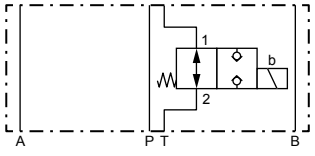
Z.22061T



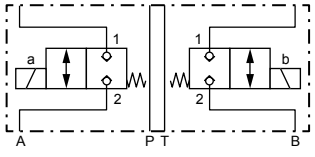
Z.22060B



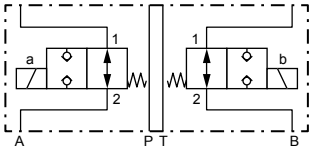
Z.22060T



Z.22061AB

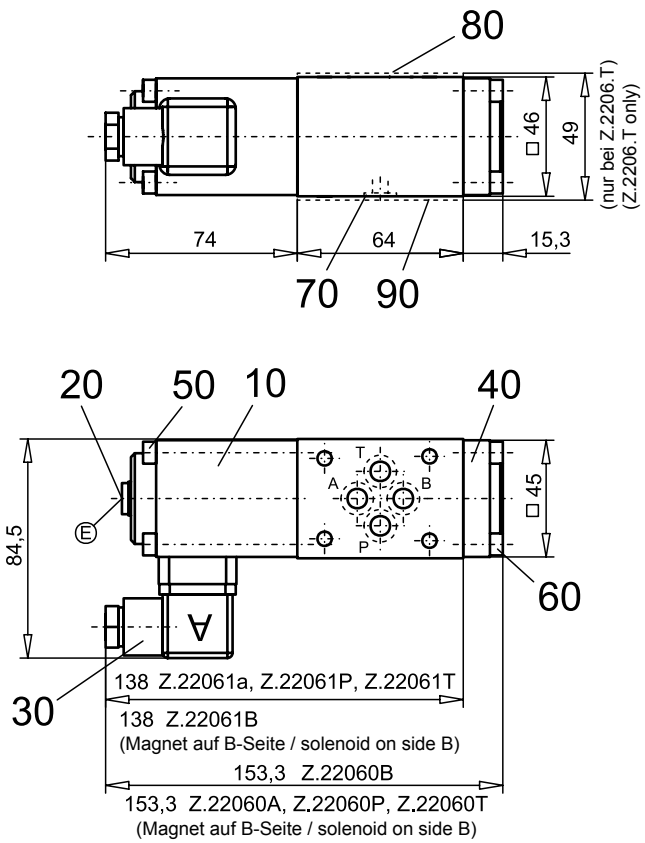


Z.22060AB

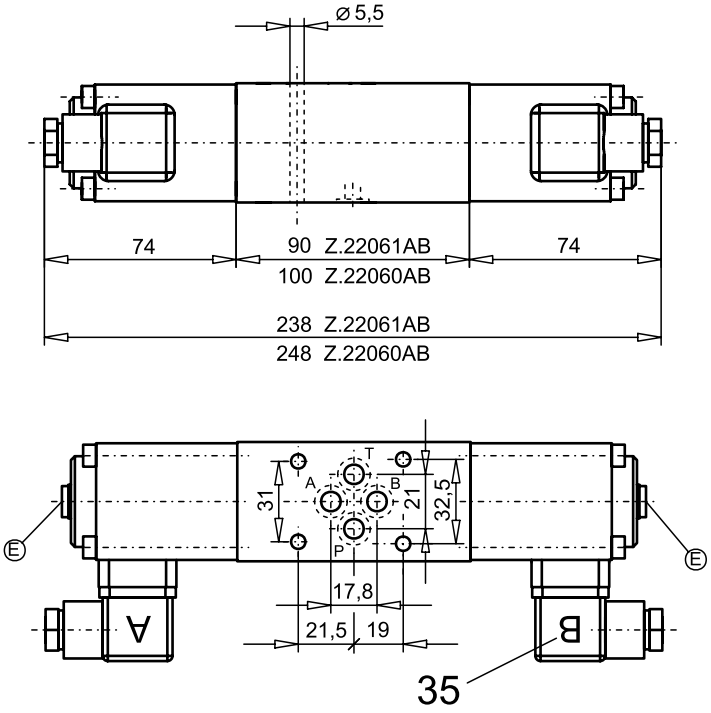


DIMENSIONS

Poppet valve in A, B, P or T



Poppet valve in A and B



E = air bleed screw

PARTS LIST

Position	Article	Description
10	260.6… 260.7…	Medium-solenoid SIN45V Super-solenoid SIS45V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	058.4210	Cover
50	246.2160	Socket head cap screw M5x60 DIN 912
60	246.2117	Socket head cap screw M5x16 DIN 912
70	160.2093	O-ring ID 9,25x1,78
80	173.7700	Intermediate plate AZB6 only for Z.2206.T
90	173.3650	Sealing plate ADB6 only for Z.2206.T

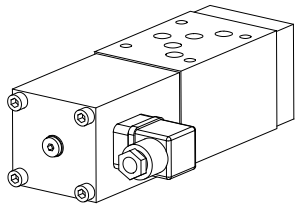
ACCESSORIES

Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve
- **2/2-way sandwich construction**
- **Q_{max} = 80 l/min**
- **p_{max} = 350 bar**

NG10
ISO 4401-05



DESCRIPTION
Poppet valve, sandwich design NG10 according to ISO 4401-05, available as a 2/2-way valve normally open or closed. The central functioning element of all directly controlled poppet valves in the NG10 series is the poppet valve cartridge NG10. See data sheet 1.11-2040. The solenoids correspond to VDE standard 0580.
Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION
The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform.

TYPE CODE

Z ☐ 2 2 10 ☐ ☐ - ☐ # ☐

Poppet valve, construction sandwich						
Medium-solenoid	M					
Super-solenoid	S					
2-way (connections)						
2 positions						
Nominal size 10						
Normally closed	1					
Normally open	0					
Type list / function Poppet valve	in P	P	in T	T		
	in A and B	AB	in A	A	in B	B
Nominal voltage U_N	12 VDC	G12	110 VAC	R110		
	24 VDC	G24	115 VAC	R115		
			230 VAC	R230		
Design-Index (Subject to change)						

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG10 acc. to ISO 4401-05
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Sandwich constr., 4 mounting holes for socket head screws or locking screws M6
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 9,5 Nm (Quality 8.8)
Masse poppet valve in:	
A, B, P or T	m = 4,6 kg
A and B normally closed.	m = 6,4 kg
A and B normally open	m = 10,8 kg
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

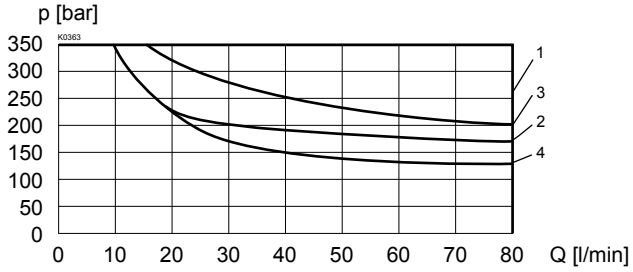
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 80 l/min see characteristics

ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 to 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Over device plug connection to ISO 4400/DIN 43 650, (2P+E), other connections on request
Solenoid:	– Medium SIN60V (1.1-145) – Super SIS60V (1.1-150)

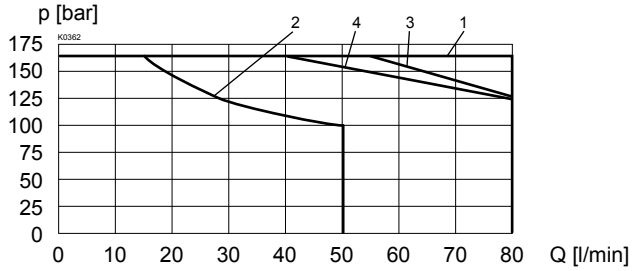
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit with standard voltage -10% Super

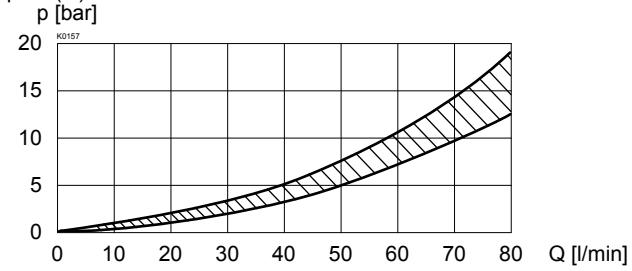


Type	Flow direction 1 → 2	Flow direction 2 → 1
Z.22101P	1	2
Z.22101T	1	2
Z.22101A	1	2
Z.22101B	1	2
Z.22101AB	1	2
Z.22100P	1	3
Z.22100T	1	3
Z.22100A	1	3
Z.22100B	1	3
Z.22100AB	1	4

p = f (Q) Performance limit with standard voltage -10% Medium

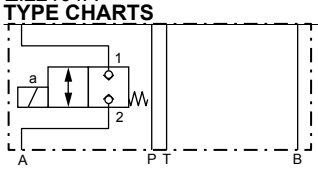


Δp = f (Q) Pressure loss/flow characteristics

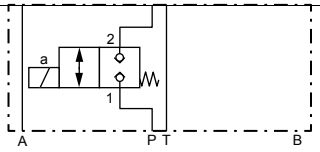


TYPE CHARTS

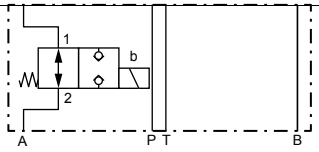
Z.22101A



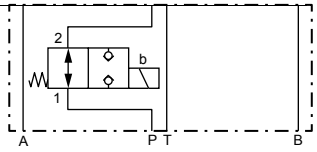
Z.22101P



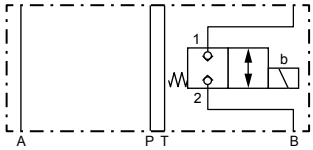
Z.22100A



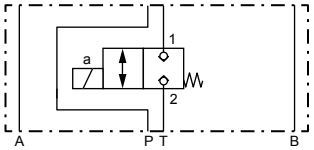
Z.22100P



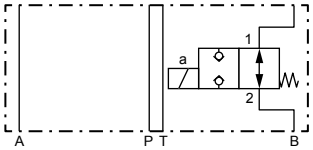
Z.22101B



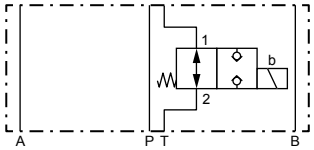
Z.22101T



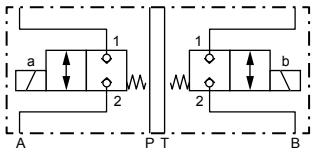
Z.22100B



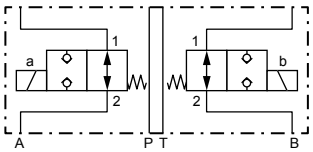
Z.22100T



Z.22101AB

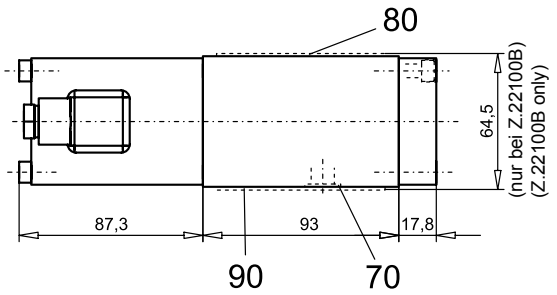


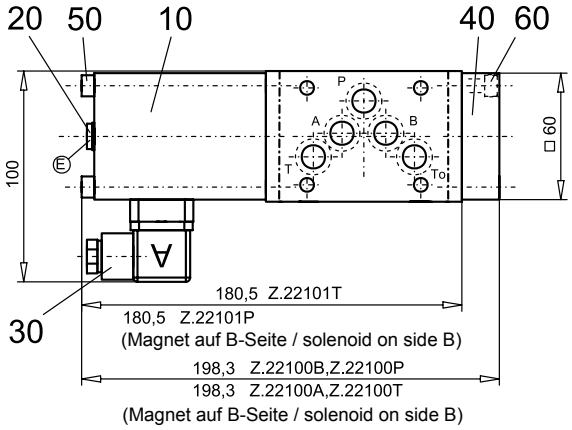
Z.22100AB



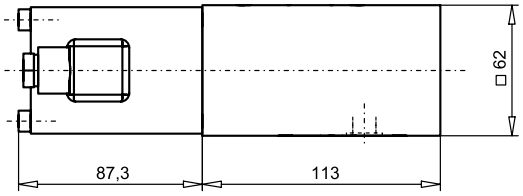
DIMENSIONS

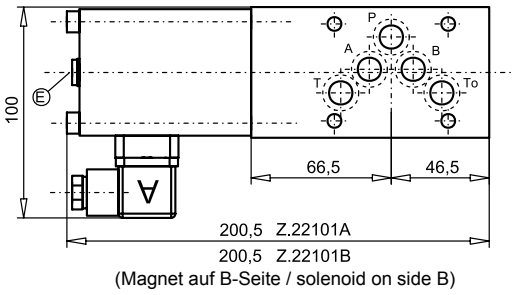
Poppet valve in A, B, P or T normally open
Poppet valve in P or T normally closed



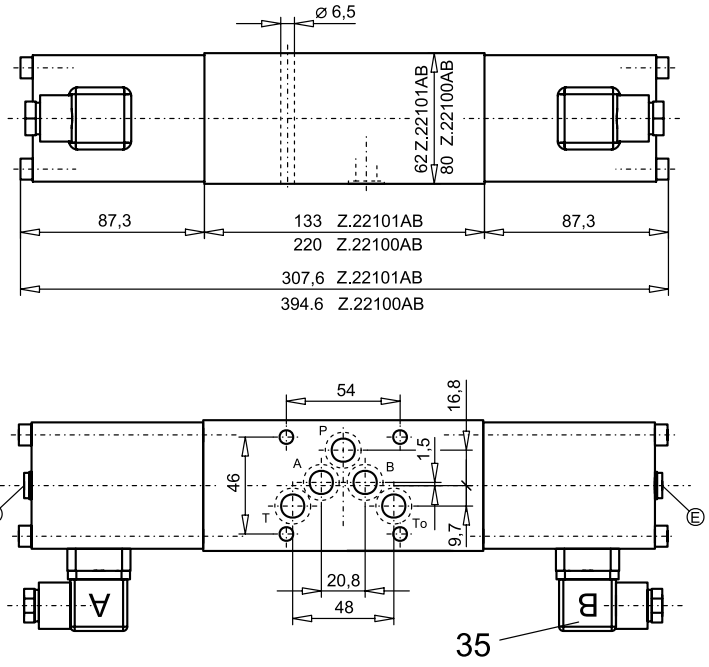


Poppet valve in A or B normally closed





Poppet valve in A and B



E = air bleed screw

PARTS LIST

Position	Article	Description
10	260.8… 260.9…	Medium-solenoid SIN60V Super-solenoid SIS60V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	059.2200	Cover
50	246.3190	Socket head cap screw M6x90 DIN 912
60	246.3121	Socket head cap screw M6x20 DIN 912
70	160.2140	O-ring ID 14,00x1,78
80	173.4700	Intermediate plate AZB10 only to Z.22100B
90	173.4650	Sealing plate ADB10 only to Z.22100B

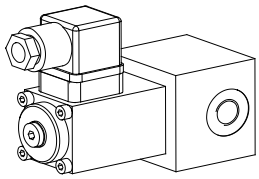
ACCESSORIES

Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Solenoid poppet valve for installation in pipes
- **2/2-way construction**
- **Q_{max} = 15 l/min**
- **p_{max} = 350 bar**

NG4



DESCRIPTION
Poppet valve, for installation in pipes, as 2/2-way valve normally open or closed. The central functioning element of poppet valves is the poppet valve cartridge NG4. See data sheet 1.11-2020. The solenoids correspond to VDE standard 0580. The threaded body with con-nections G1/4" is painted.
Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION
The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

TYPE CODE

G □ 2 2 04 □ - □ # □

Threaded connection				
Medium-solenoid		M		
Super-solenoid		S		
2-way (connection)				
2 position				
Nominal size 4				
Normally closed		1		
Normally open		0		
Nominal voltage U_N	12 VDC	G12	110 VAC	R110
	24 VDC	G24	115 VAC	R115
			230 VAC	R230
Design-Index (Subject to change)				

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG4
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Installation in pipes (see dimensions)
Connection	Threaded connection G1/4"
Ambient temperature	-20…+50 °C
Mounting position	any
Weight	m = 1,2 kg
Volume flow direction	any (see characteristics)

ELECTRICAL CONTROL

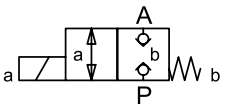
Construction	Solenoid, wet pin push, pressure tight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 at 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request.
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Overdevice plug connection to ISO 4400 / DIN 43650, (2P+E), other connections on request
Solenoid:	– Medium SIN35V (data sheet 1.1-105) – Super SIS35V (data sheet 1.1-110)

HYDRAULIC SPECIFICATIONS

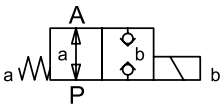
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 15 l/min (see characteristics)

SYMBOLS

G.22041

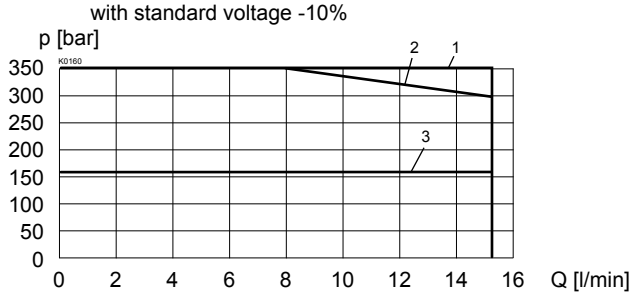


G.22040



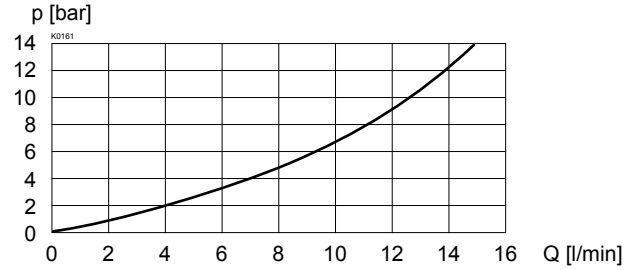
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit
with standard voltage -10%



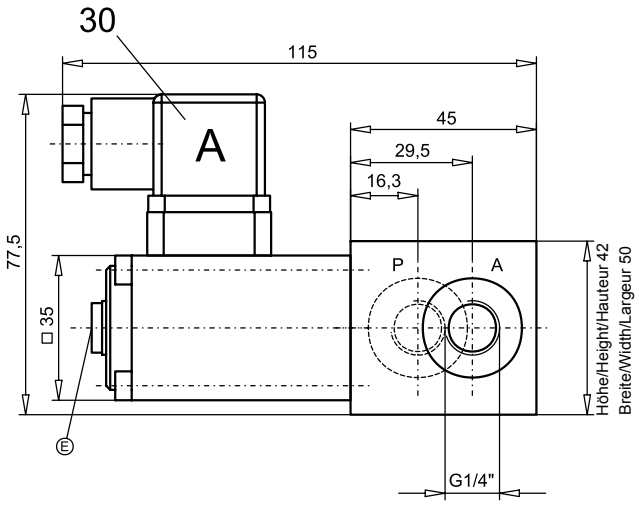
	Flow direction	
Type	P → A	A → P
GM2204.	3	3
GS2204.	1	2

Δp = f (Q) Pressure loss / flow characteristics

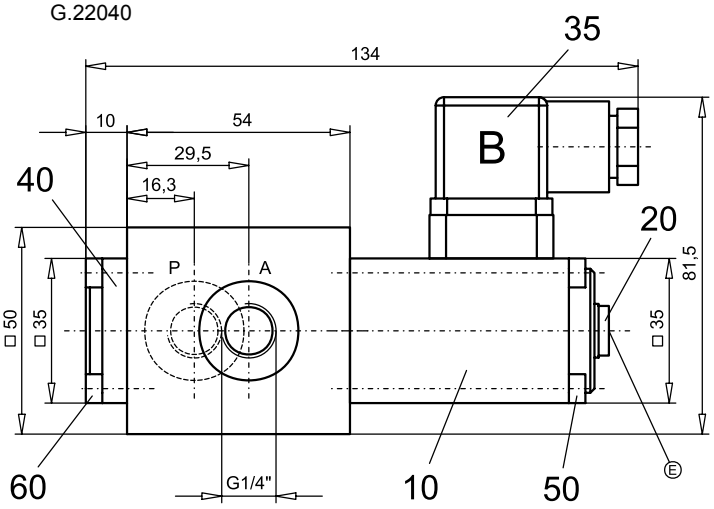


DIMENSIONS

G.22041



G.22040



E = air bleed screw

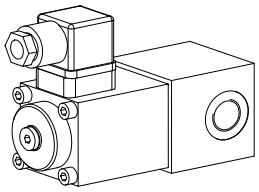
PARTS LIST

Position	Article	Description
10	260.4… 260.5…	Medium-solenoid SIN35V Super-solenoid SIS35V
20	239.2033	Locking screw (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	057.4201	Cover
50	246.1161	Socket head cap screw M4x60 DIN 912
60	246.1113	Socket head cap screw M4x12 DIN 912

Technical explanation see data sheet 1.0-100

Solenoid poppet valve for installation in pipes
- **2/2-way construction**
- **Q_{max} = 40 l/min**
- **p_{max} = 350 bar**

NG6



DESCRIPTION
Poppet valve, for installation in pipes, as 2/2-way valve normally open or closed. The central functioning element of poppet valves is the poppet valve cartridge NG6. See data sheet 1.11-2030. The solenoids correspond to VDE standard 0580. The threaded body with connections G3/8" is painted.
Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION
The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

TYPE CODE

G ☐ 2 2 06 ☐ - ☐ # ☐

Threaded connection				
Medium-solenoid	M			
Super-solenoid	S			
2-way (connection)				
2 position				
Nominal size 6				
Normally closed	1			
Normally open	0			
Nominal voltage U_N	12 VDC	G12	110 VAC	R110
	24 VDC	G24	115 VAC	R115
			230 VAC	R230
Design-Index (Subject to change)				

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG6
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Installation in pipes (see dimensions)
Connection	Threaded connection G3/8"
Ambient temperature	-20…+50 °C
Mounting position	any
Weight	m = 1,7 kg
Volume flow direction	any (see characteristics)

ELECTRICAL CONTROL

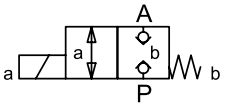
Construction	Solenoid, wet pin push, pressure tight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 at 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request.
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Overdevice plug connection to ISO 4400 / DIN 43 650, (2P+E), other connections on request
Solenoid:	– Medium SIN45V (1.1-120) – Super SIS45V (1.1-125)

HYDRAULIC SPECIFICATIONS

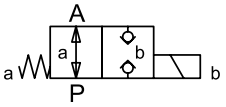
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 40 l/min (see characteristics)

SYMBOLS

G.22061

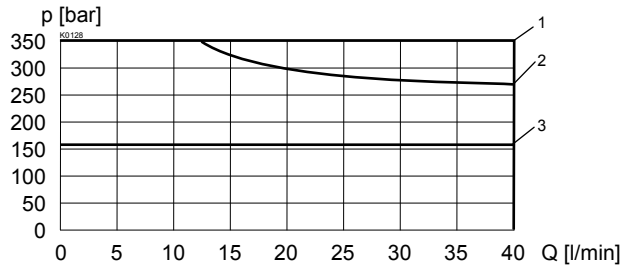


G.22060



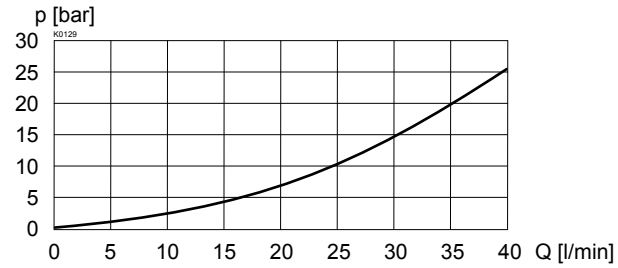
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit
with standard voltage -10%



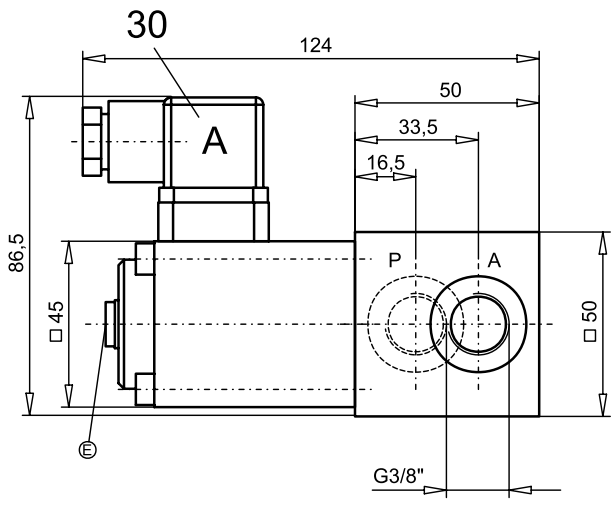
	Flow direction	
Type	P → A	A → P
GM2206.	3	3
GS2206.	1	2

Δp = f (Q) Pressure loss / flow characteristics

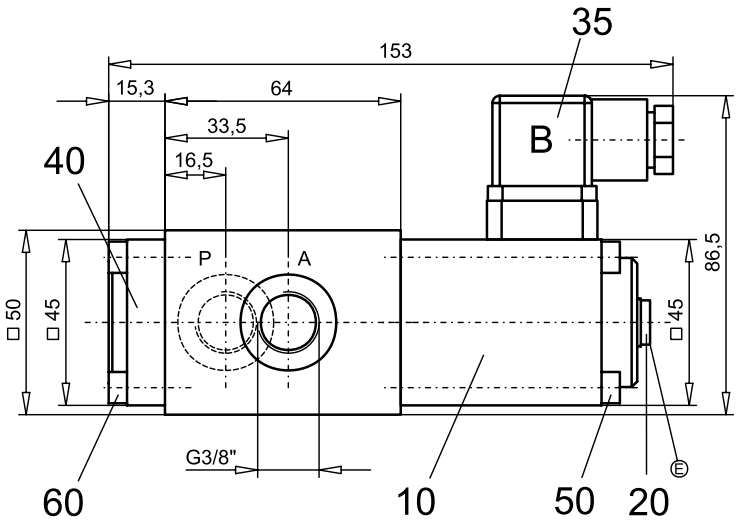


DIMENSIONS

G.22061



G.22060



E = air bleed screw

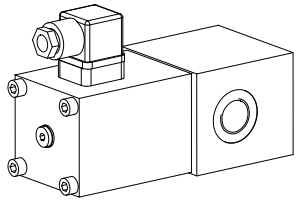
PARTS LIST

Position	Article	Description
10	260.6… 260.7…	Medium-solenoid SIN45V Super-solenoid SIS45V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	058.4215	Cover
50	246.2160	Socket head cap screw M5x60 DIN 912
60	246.2117	Socket head cap screw M5x16 DIN 912

Technical explanation see data sheet 1.0-100

Solenoid poppet valve for installation in pipes
- **2/2-way construction**
- **Q_{max} = 80 l/min**
- **p_{max} = 350 bar**

NG10



DESCRIPTION
Poppet valve, for installation in pipes, as 2/2-way valve normally open or closed. The central functioning element of poppet valves is the poppet valve cartridge NG10. See data sheet 1.11-2040. The solenoids correspond to VDE standard 0580. The threaded body with connections G1/2" is painted.
Important: When commissioning, the valve must be vented under pressure (max. 2 revolutions of screw E).

FUNCTION
The valve is direct operated by a wet pin push type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

TYPE CODE

G ☐ 2 2 10 ☐ - ☐ # ☐

Threaded connection				
Medium-solenoid		M		
Super-solenoid		S		
2-way (connection)				
2 position				
Nominal size 10				
Normally closed		1		
Normally open		0		
Nominal voltage U_N	12 VDC	G12	110 VAC	R110
	24 VDC	G24	115 VAC	R115
			230 VAC	R230
Design-Index (Subject to change)				

GENERAL SPECIFICATIONS

Description	2/2-way poppet valve
Nominal size	NG10
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Installation in pipes (see dimensions)
Connection	Threaded connection G1/2"
Ambient temperature	-20…+50 °C
Mounting position	any
Weight	m = 4,0 kg
Volume flow direction	any (see characteristics)

ELECTRICAL CONTROL

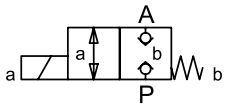
Construction	Solenoid, wet pin push, pressure tight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC U_N = 110 VAC∗, 115 VAC∗, 230 VAC∗ AC = 50 at 60 Hz ∗ Rectifier integrated in the plug Other nominal voltages and nominal performances on request.
Voltage tolerance	± 10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Overdevice plug connection to ISO 4400 / DIN 43 650, (2P+E), other connections on request
Solenoid:	– Medium SIN60V (data sheet 1.1-145) – Super SIS60V (data sheet 1.1-150)

HYDRAULIC SPECIFICATIONS

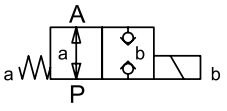
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	Medium: p_{max} = 160 bar Super: p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 80 l/min (see characteristics)

SYMBOLS

G.22101

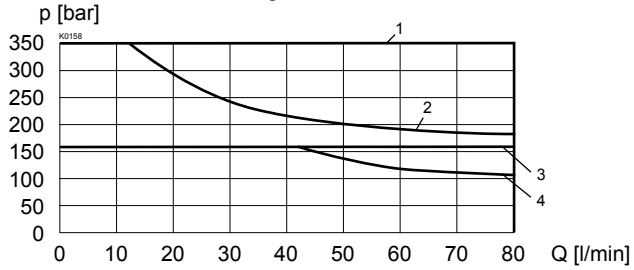


G.22100



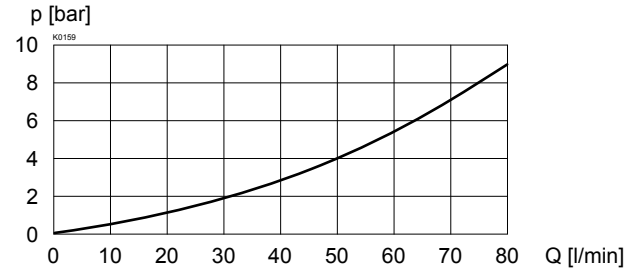
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit
with standard voltage -10%



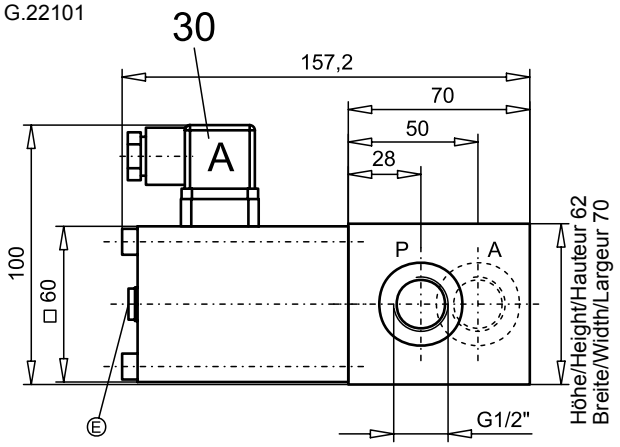
	Flow direction	
Type	P → A	A → P
GM2210.	3	4
GS2210.	1	2

Δp = f (Q) Pressure loss / flow characteristics

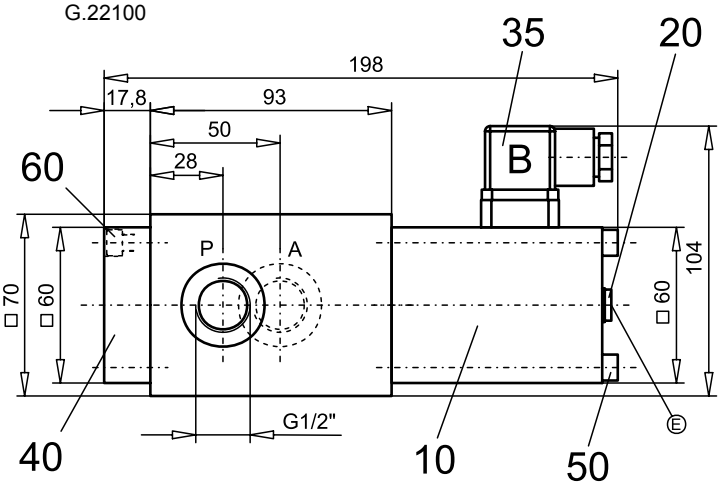


DIMENSIONS

G.22101



G.22100



E = air bleed screw

PARTS LIST

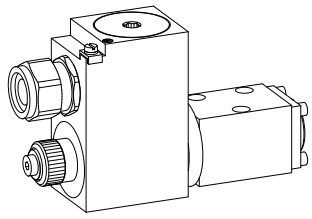
Position	Article	Description
10	260.8… 260.9…	Medium-solenoid SIN60V Super-solenoid SIS60V
20	239.2033	Plug (incl. seal) HB0
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	059.2200	Cover
50	246.3190	Socket head cap screw M6x90 DIN 912
60	246.3121	Socket head cap screw M6x20 DIN 912

Technical explanation see data sheet 1.0-100

Solenoid poppet valve
- **2/2-, 3/2- and 3/4-way type**
- **Q_{max} = 15 l/min**
- **p_{max} = 350 bar**

NG4-Mini®

Ex II 2 G Ex d IIC
Ex II 2 D Ex tD A21 IP65
Ex I M2 Ex d I Mb



DESCRIPTION

For explosion-hazard zones
Direct opperated poppet valve flange type NG4-Mini. Activated with Wandfluh explosion proof solenoid.
Solenoid coil in acc. with directive 94/9/EC (ATEX) for explosion-hazard zones.
The flameproof enclosures (acc. to EN/IEC 60079-1/31 and EN/IEC 61241-1) prevents an explosion in the interior from getting outside.
The design prevents a surface temperature capable of igniting.

CERTIFICATES

in accordance with	Surface gas + dust	Mining
ATEX	x	x
IECEx	x	x
GOST Ex	x	x
Australia	x	x
Inmetro	x	x
NEPSI	x	

The certificates can be found on **www.wandfluh.com** / DOWNLOADS / Accompanying Ex-proof / **MKY45/18-..-L..**

FUNCTION

The central functioning element of all directly controlled poppet valves is the poppet valve cartridge NG4. The valve is operated by a explosion proof type solenoid which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

These valves are suitable for applications in explosion-hazard zones, open cast and also in mines. Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

TYPE CODE

2/2- or 3/2-way construction	B	EXd	☐	2	04	☐	-	☐	/	☐	/	☐	#	☐		
3/4-way construction	B	EXd	3	4	04	☐	-	☐	/	☐	/	☐	#	☐		

Interface acc. to Wandfluh standard

Explosion proof version, Ex d

2-way (connections) [2]
3-way (connections) [3]

2 position
4 position

Nominal size 4-Mini

Normally closed solenoid on A-Side [1a]
Normally open solenoid on B-Side [0b]

Nominal voltage U_N
- 12 VDC [G12]
- 24 VDC [G24]
- 115 VAC [R115]
- 230 VAC [R230]

Nominal power P_N (Ambient temp. by:)
- 9 W [L9] 40 °C or 90 °C
- 15 W [L15] 70 °C

Certificate
- ATEX, IECEx, GOST Ex [ ]
- Australia [AU]
- Inmetro [IM]
- NEPSI [NP]

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG4-Mini acc. to Wandfluh standard
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Flange asdfasdfaf, 3 mounting holes for Cyl. screws M5x40 or M5x60 with distance plate BDP4/12
Connections	Threaded connection plates and Multi-flange subplates, Longitudinal stacking system
Admissible ambient temp	Execution L9 -20…+40 °C (operation as T1…T6/T80 °C) -20…+90 °C (operation as T1…T4/T130 °C) Execution L15 -20…+70 °C (operation as T1…T4/T130 °C) In case of U_N < 20V, the max. ambient temperature has to be reduced by 10 °C.
Mounting position	any, preverable horizontal
Fastening torque	M_D = 5,5 Nm (quality 8.8) for fixing screw M_D = 5 Nm for knurled nut
Weight: 2/2-, 3/2-way	m = 3,2 kg
3/4-way	m = 5,0 kg
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet Nr. 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Admissible fluid temp.	Execution L9 -20…+40 °C (operation as T1…T6/T80 °C) -20…+70 °C (operation as T1…T4/T130 °C) Execution L15 -20…+70 °C (operation as T1…T4/T130 °C)
Working pressure	p_{max} = 350 bar
Max. volume flow	Q_{max} = 15 l/min, see characteristics

In case of the execution L15 for ambient temperatures of up to 70 °C the characteristic performance values were established at an ambient temperature of 50 °C.

ELECTRICAL CONTROL

Construction	Solenoid, wet pin push, pressure tight
Standard-nominal voltage	U_N = 12 VDC, U_N = 24 VDC U_N = 115 VAC, U_N = 230 VAC AC = 50 to 60 Hz ± 2%; with built-in two-way rectifier
Voltage tolerance	±10% of nominal voltage
Protection class	IP67 acc. to EN 60 529
Relative duty factor	100% DF
Switching cycles	12000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection / Power supply	Through cable gland for cable diameter ∅ 6,5…14 mm
Temperature classe:	(acc. to EN 60079-0)
Execution L9	T1…T6
Execution L15	T1…T4
Nominal power:	
Execution L9	9 W
Execution L15	15 W

For further electrical characteristics, refer to the data sheet of the solenoid coil 1.1-183

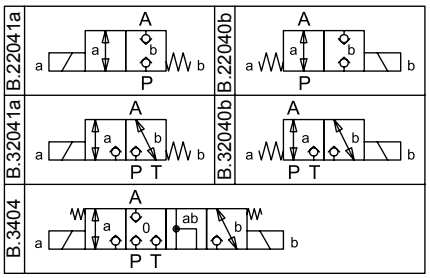
SECURITY OPERATED

The solenoid coil must only be put into operation, if the requirements of the operating instructions supplied are observed to their full extent.
In case of non-observance, no liability can be assumed.

INSTALLATION

For stack assembly please observe the remarks in the operating instructions.

SYMBOLS

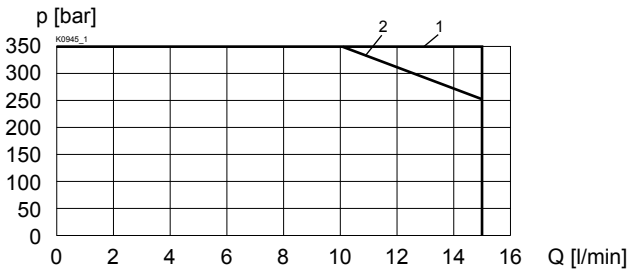


CHARACTERISTICS Oil viscosity υ = 30 mm²/s

Execution L9 / 90 °C on request

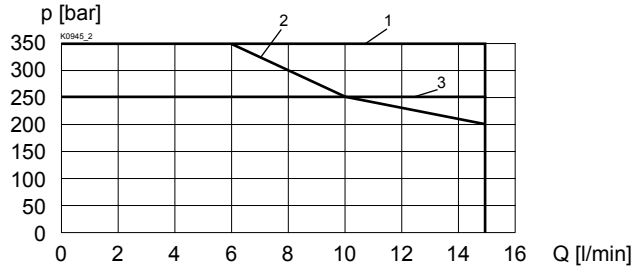
p = f (Q) Performance limits
with standard voltage -10%

Execution L15
(measured at 50 °C)



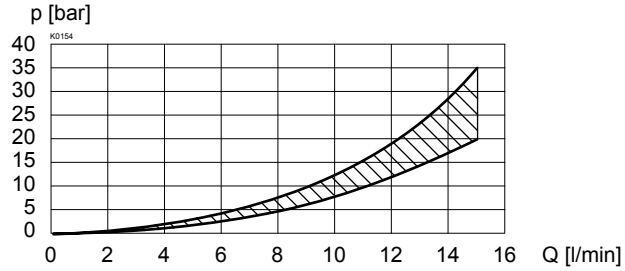
Type	Flow direction			
	P - A	A - T	A - P	T - A
BEXd22041a	1	-	1	-
BEXd22040b	1	-	1	-
BEXd32041a	1	1	2	1
BEXd32040b	1	1	1	1
BEXd3404	1	1	1	1

Execution L9
(measured at 40 °C)



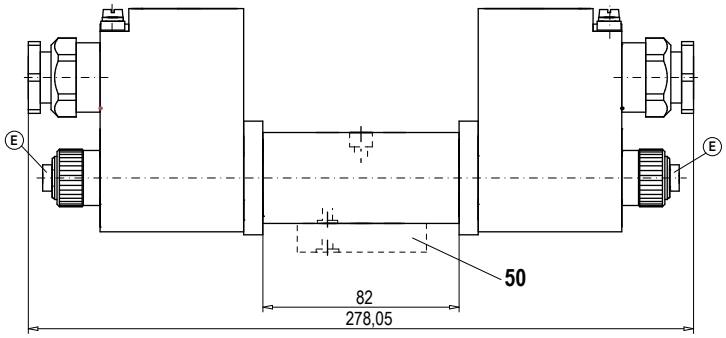
Type	Flow direction			
	P - A	A - T	A - P	T - A
BEXd22041a	1	-	1	-
BEXd22040b	1	-	2	-
BEXd32041a	1	2	1	1
BEXd32040b	1	1	3	1
BEXd3404	1	1	1	1

Δ = f (Q) Pressure loss / flow characteristics

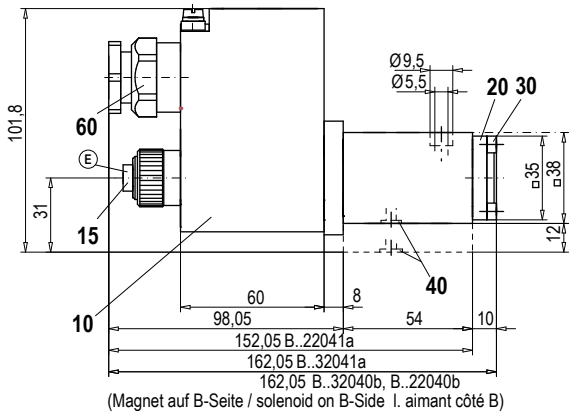


DIMENSIONS

3/4-way poppet valve



2/2-way poppet valve
3/2-way poppet valve

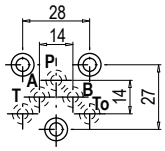


(Magnet auf B-Seite / solenoid on B-Side I. aimant côté B)

E = air bleed screw

Dimensions of the solenoid coil refer to data sheet 1.1-183

Order distance plate BDP4/12 separatley



PARTS LIST

Position	Article	Description
10	263.6 …	Sool MKY45/18x60-...
15	239.2033	Plug HB0 (incl. seal)
20	057.4202	Cover
30	246.1113	Socket head cap screw M4x12 DIN 912
40	160.2052	O-ring ID 5,28x1,78
50	173.1450	Distance plate BDP4/12
60	111.1080	Cable gland brass M20

ACCESSORIES

Threaded connectiong plates, Multi-flange subplates and
Longitudinal stacking system see Reg. 2.9

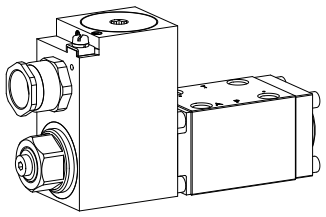
Technical explanation see data sheet 1.0-100

Solenoid poppet valve
- **2/2-, 3/2- and 3/4-way type**
- **Q_{max} = 40 l/min**
- **p_{max} = 350 bar**

NG6

ISO 4401-03

II 2 G Ex d IIC
II 2 D Ex tD A21 IP65
I M2 Ex d I Mb



DESCRIPTION

For explosion-hazard zones
Direct opperated poppet valve flange type NG6. Activated with Wandfluh explosion proof solenoid.
Solenoid coil in acc. with directive 94/9/EC (ATEX) for explosion-hazard zones.
The flameproof enclosures (acc. to EN/IEC 60079-1/31 and EN/IEC 61241-1) prevents an explosion in the interior from getting outside.
The design prevents a surface temperature capable of igniting.

FUNCTION

The central functioning element of all directly controlled poppet valves is the poppet valve cartridge NG6. With the controlling solenoid, resp. with the spring located opposite, the poppet valve spools are either opened or closed. Thanks to the poppet valve spool design with the same surface area on both sides and with pressure balancing, no undesirable hydraulic closing - and opening forces are generated. Therefore, the oil flow through the poppet valve is possible in both directions. The valve seals tightly at all closed seats without any oil leakage.

APPLICATION

These valves are suitable for applications in explosion-hazard zones, open cast and also in mines. Poppet valves from Wandfluh are used wherever absolutely tight sealing closing functions, such as the holding of loads, tensioning and clamping are of decisive importance. Mechanically and functionally, poppet valves may be used fully interchangeably instead of spool valves at any time.

CERTIFICATES

in accordance with	Surface gas and dust	Mining
ATEX	x with option -60°C	x
IECEx	x with option -60°C	x
GOST Ex	x	x
Australia	x	x
Inmetro	x	x
NEPSI	x	

The certificates can be found on **www.wandfluh.com** / DOWNLOADS / Accompanying Ex-proof / **MKY45/18-..-L..**

TYPE CODE

2/2- or 3/2-way construction	A	EXd	☐	2	06	☐	-	☐	/	☐	/	☐	-	☐	#	☐				
3/4-way construction	A	EXd	3	4	06		-	☐	/	☐	/	☐	-	☐	#	☐				

International connection standard ISO

Explosion protection version, Ex d

2-way (connections) 2
3-way (connections) 3

2 switching positions
4 switching positions

Nominal size 6

Normally closed solenoid on A-side 1a
Normally open solenoid on B-side 0b

Nominal voltage U_N
- 12 VDC G12
- 24 VDC G24
- 115 VAC R115
- 230 VAC R230

Nominal power P_N (Ambient temp by 40 °C or 90 °C / 70 °C)
- 9 W L9
- 15 W L15

Certification
- ATEX, IECEx, GOST Ex
- Australien AU
- Inmetro IM
- NEPSI NP

Temperature range
- -25°C to ...
- -40°C to ... Z604 only with 15W
- -60°C to ... Z591 only with 15W / ATEX and IECEx / Surface

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-, 3/2- und 3/4-way poppet valve
Nominal size	NG6 acc. to ISO 4401-03
Construction	Direct operated poppet valve
Operations	Solenoid
Mounting	Flange four mounting holes for cyl. screws, or M5x45 In case of valves for the temperature ran ge „-60°C to ...“ (Z591) screws of the quality A4 have to be used.
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Admissible ambient temp:	**Execution L9:** -25…+40 °C (operation as T1…T6/T80 °C) -25…+90 °C (operation as T1…T4/T130 °C) **Execution L15:** Temperature range „-25° to ...“ -25…+70 °C (operation as T1…T4/T130 °C) Temperature range „-40° to ...“ -40…+70 °C (operation as T1…T4/T130 °C) Temperature range „-60° to ...“ -60…+70 °C (operation as T1…T4/T130 °C) In case of U_N < 20V, the max. ambient temperature has to be reduced by 10 °C.
Mounting position	any, preverable horizontal
Fastening torque	M_D = 5,5 Nm (quality 8,8) for fixing screw M_D = 5 Nm for knurled nut
Weight: 2/2-, 3/2-way	m = 3,3 kg
3/4-way	m = 5,4 kg
Volume flow direction	any (see characteristics)

HYDRAULIC SPECIFICATIONS

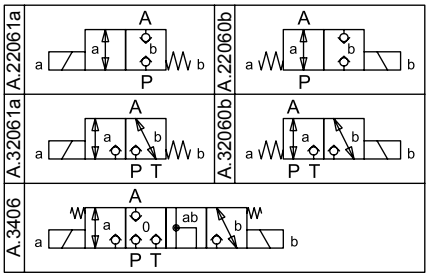
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14
Verschmutzungsgrad	(Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Admissible fluid temp.	**Execution L9:** -25…+40 °C (operation as T1…T6/T80 °C) -25…+70 °C (operation as T1…T4/T130 °C) **Execution L15:** Temperature range „-25° to ...“ -25…+70 °C (operation as T1…T4/T130 °C) Temperature range „-40° to ...“ -40…+70 °C (operation as T1…T4/T130 °C) Temperature range „-60° to ...“ -60…+70 °C (operation as T1…T4/T130 °C)
Working pressure	p_{max} = 350 bar
Max. volume flow	Q_{max} = 40 l/min, see characteristics

ELECTRICAL CONTROL

Construction	Solenoid, wet pin push, pressure tight
Standard-nominal voltage	U_N = 12 VDC, 24 VDC, 115 VAC, 230 VAC AC = 50 to 60 Hz ± 2% with built-in two way rectifier
Voltage tolerance	±10% of nominal voltage
Protection class	IP67 acc. to EN 60 529
Relative duty factor	100% DF
Switching cycles	12 000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection / Power supply	Through cable entry for cable diameter ∅ 6,5…14 mm
Temperature class:	(acc. to EN 60079-0)
Execution L9	T1…T6
Execution L15	T1…T4
Nominal power:	
Execution L9	9 W
Execution L15	15 W

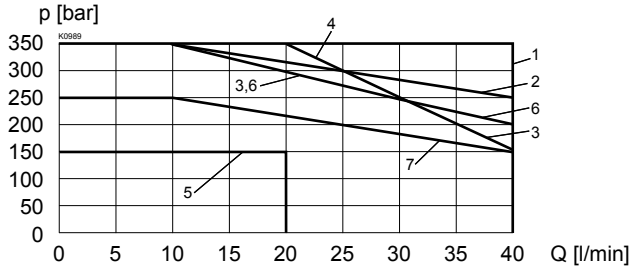
For further electrical characteristics, refer to the data sheet of the solenoid coil: 1.1-183

SYMBOLS



CHARACTERISTICS Oil viscosity $\upsilon = 30\ mm^2/s$

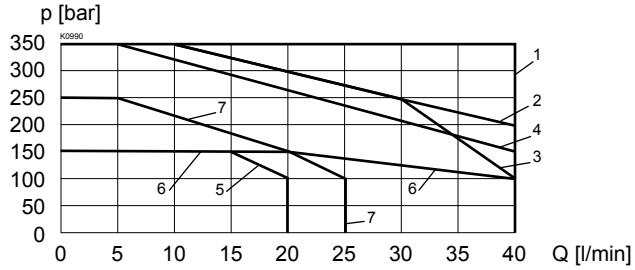
p = f (Q) Performance limits
with standard voltage -10 %
Execution L15
(measured at 50 °C)



Type	Flow direction			
	P - A	A - T	A - P	T - A
AEXd22061a	1	-	6	-
AEXd22060b	1	-	3	-
AEXd32061a	1	2	5	1
AEXd32060b	1	4	7	1
AEXd3406	1	1	6	6

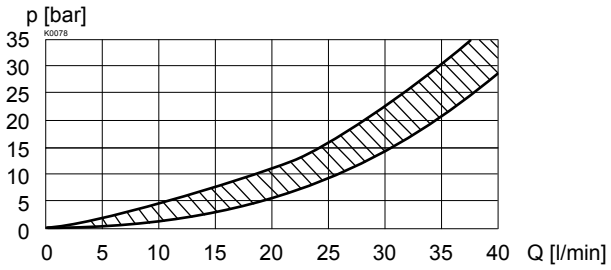
Execution L9 / 90 °C on request

Execution L9
(measured at 40 °C)



Type	Flow direction			
	P - A	A - T	A - P	T - A
AEXd22061a	1	-	6	-
AEXd22060b	1	-	3	-
AEXd32061a	1	2	5	1
AEXd32060b	1	4	7	1
AEXd3406	1	1	6	6

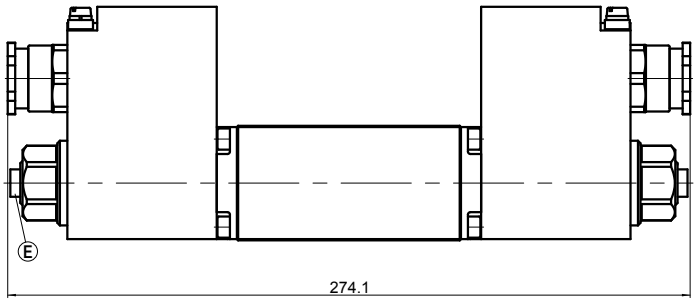
$\Delta p = f (Q)$ Pressure loss / flow characteristics



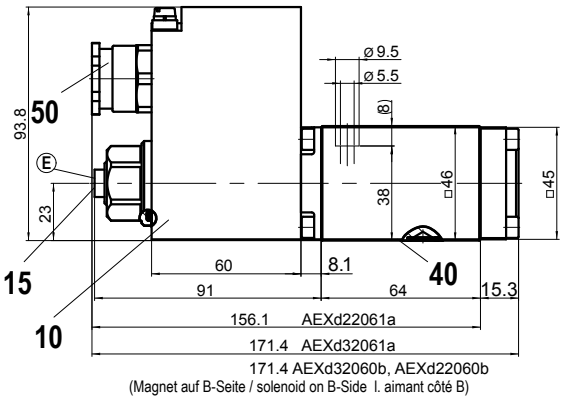
In case of the execution L15 for ambient temperatures of up to 70 °C the charac-
teristic performance values were established at an ambi ent temperature of 50 °C.

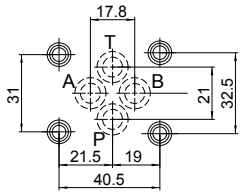
DIMENSIONS

3/4-way poppet valve



2/2-, 3/2-way poppet valve





E = air bleed screw

Dimensions of the solenoid coil, refer to data sheet 1.1-183

PARTS LIST

Position	Article	Description
10	263.6 …	Coil type MKY 45/18x60-.....
15	239.2033	Plug HB0 (incl. sealing ring) **„-25°C to ...“ and „-40°C to ...“**
	239.2043	Plug HB0-H40-Z591 (incl. sealing ring) **„-60°C to ...“**
40	160.2093	O-ring ID 9,25x1,78 **„-25°C to ...“**
	160.7092	O-ring ID 9.25x1,78 **„-40°C to ...“**
	160. 0091	O-ring ID 9,25x1,78 **„-60°C to ...“**
50	111.1080	Cable entry brass M20x1,5

ACCESSOIRES

Threaded connecting plates see Reg. 2.9

Technical explanation see data sheet 1.0-100

INSTALLATION

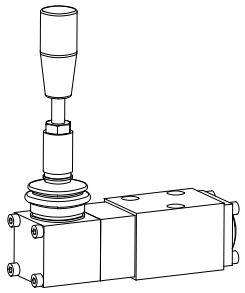
For stack assembly please observe the remarks in the operating instructions.

SECURITY OPERATED

The solenoid coil must only be put into operation, if the requirements of the operating instructions supplied are observed to their full extent.
In case of non-observance, no liability can be assumed.

Poppet valve manually operated
- **2/2-, 3/2- and 3/4-way construction**
- **Q_{max} = 15 l/min**
- **p_{max} = 350 bar**

NG4-Mini®



DESCRIPTION

Poppet valve, flanged design NG4-Mini according to Wandfluh standard, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppoet valves in the NG4-Mini series is the poppet valve cartridge NG4. See data sheet 1.11-2020.

FUNCTION

The valve is manual lever which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION

Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time. NG4-mini valves are used where a light, compact unit is needed.

TYPE CODE

2/2- or 3/2-way construction	B	H	☐	2	04	☐	#	☐
3/4-way construction	B	H	3	4	04		#	☐

Interface acc. to Wandfluh standard

Lever

2-way (connections) [2]
3-way (connections) [3]

2 position
4 position

Nominal size 4-Mini

Normally closed — Lever on A-side — 1a ☐
Normally open — Lever on B-side — 0b ☐

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG4-Mini acc. to Wandfluh standard
Construction	Direct operated poppet valve
Operations	manually operated
Mounting	Flange, 3 mounting holes for socket head screws M5x40
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 5,5 Nm (quality 8,8)
Weight: 2/2-, 3/2-way	m = 0,95 kg
3/4-way	m = 1,45 kg
Volume flow direction	any (see characteristics)

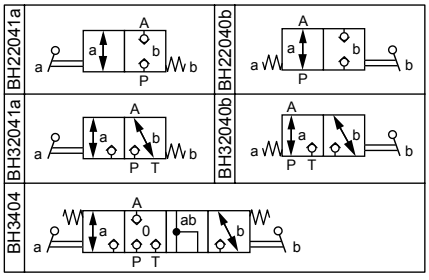
CONTROL MECHANICAL

Force	$F_{b\,max.}$ = 20–120 N (depending on flow direction and pressure)
Angle	α_b = 5°

HYDRUALIC SPECIFICATIONS

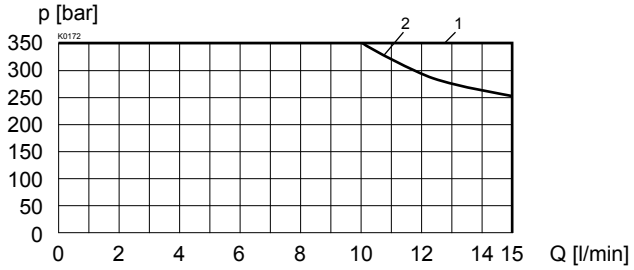
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 15 l/min see characteristics

SYMBOLS



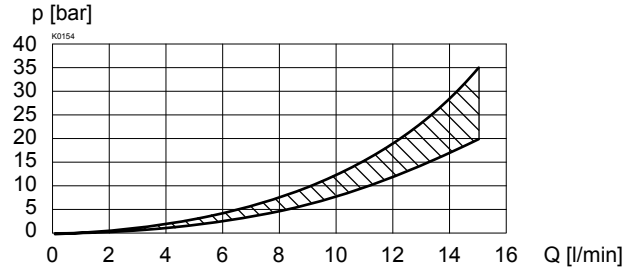
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit



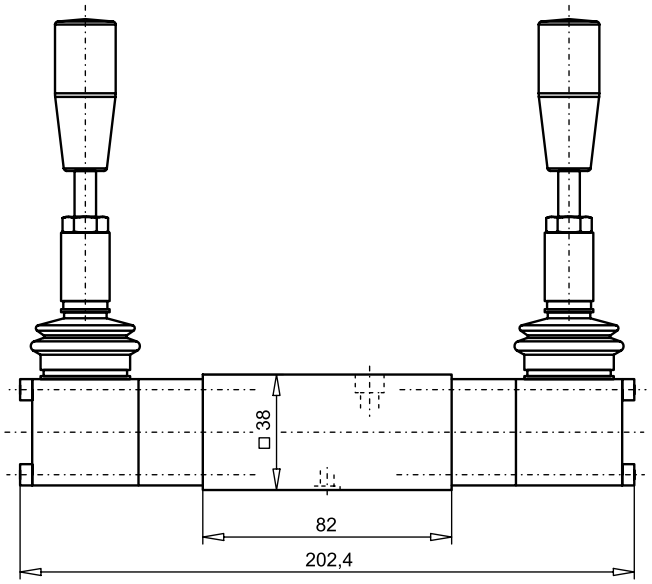
Type	Flow direction			
	P - A	A - T	A - P	T - A
BH22041a	1	-	1	-
BH22040b	1	-	2	-
BH32041a	1	2	1	1
BH32040b	1	1	2	1
BH3404	1	1	1	1

Δp = f (Q) Pressure loss / flow characteristics

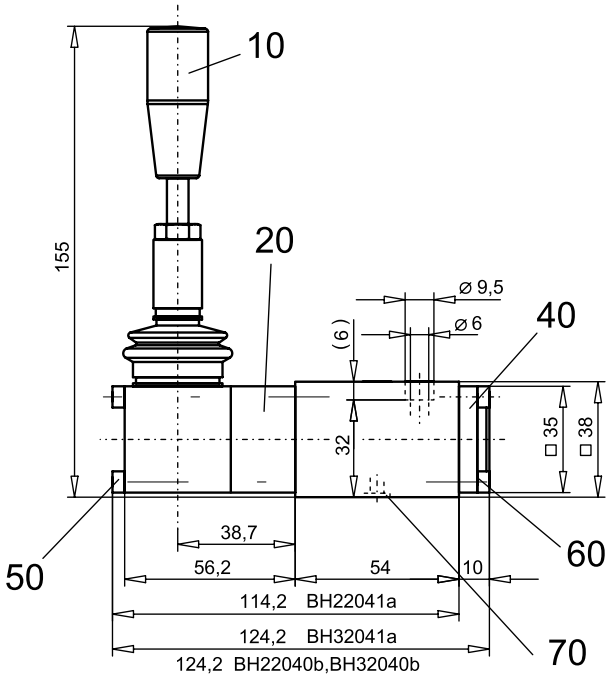


DIMENSIONS

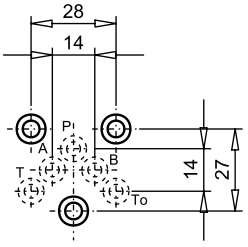
3/4-way poppet valve



2/2-way poppet valve
3/2-way poppet valve



(Hebel auf B-Seite / Lever on side B / Levier manuel au côté B)



PARTS LIST

Position	Article	Description
10	253.2000	Manual pilot head BHII
20	074.2703	Flange
40	057.4201	Cover
50	249.1007	Socket head cap screw M4x63 DIN 912
60	246.1113	Socket head cap screw M4x12 DIN 912
70	160.2052	O-ring ID 5,28x1,78

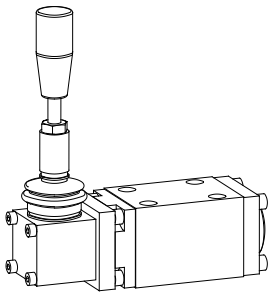
ACCESSORIES

Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Poppet valve manually operated
- **2/2-, 3/2- and 3/4-way construction**
- **Q_{max} = 40 l/min**
- **p_{max} = 350 bar**

NG6
ISO 4401-03



DESCRIPTION
Poppet valve, flanged design NG6 according to ISO 4401-03, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG6 series is the poppet valve cartridge NG6. See data sheet 1.11-2030.

FUNCTION
The valve is manual lever which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

TYPE CODE

2/2- or 3/2-way construction	A	H	□	2	06	□	#	□
3/4-way construction	A	H	3	4	06		#	□

International standard interface ISO

Lever

2-way (connections) 2
3-way (connections) 3

2 position
4 position

Nominal size 6

Normally closed — Level on A-side 1a
Normally open — Level on B-side 0b

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG6 acc. to ISO 4401-03
Construction	Direct operated poppet valve
Operations	manually operated
Mounting	Flange, 4 mounting holes for socket head screws M5x45
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 5,5 Nm (quality 8,8)
Weight: 2/2-, 3/2-way	m =1,7 kg
3/4-way	m = 2,5 kg
Volume flow direction	any (see characteristics)

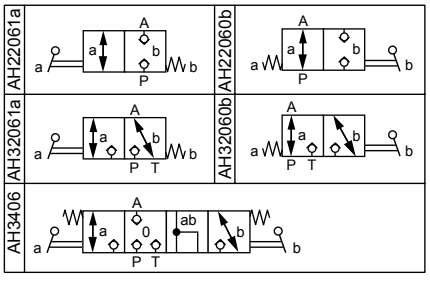
CONTROL MECHANICAL

Force	$F_{b\,max.}$ = 20–120 N (depending on flow direction and pressure)
Angle	α_b = 6°

HYDRUALIC SPECIFICATIONS

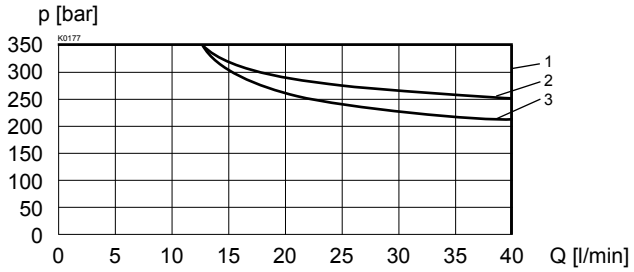
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 40 l/min see characteristics

SYMBOLS



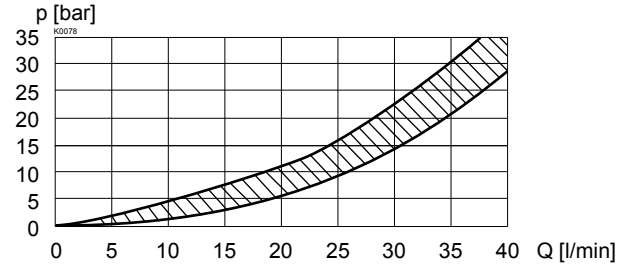
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit



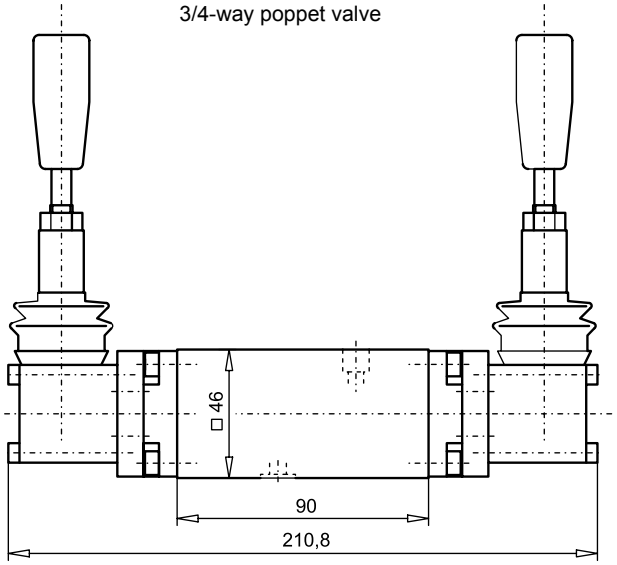
Type	Flow direction			
	P - A	A - T	A - P	T - A
AH22061a	1	-	1	-
AH22060b	1	-	3	-
AH32061a	1	2	1	1
AH32060b	1	1	2	1
AH3406	1	1	1	1

Δp = f (Q) Pressure loss/flow characteristics

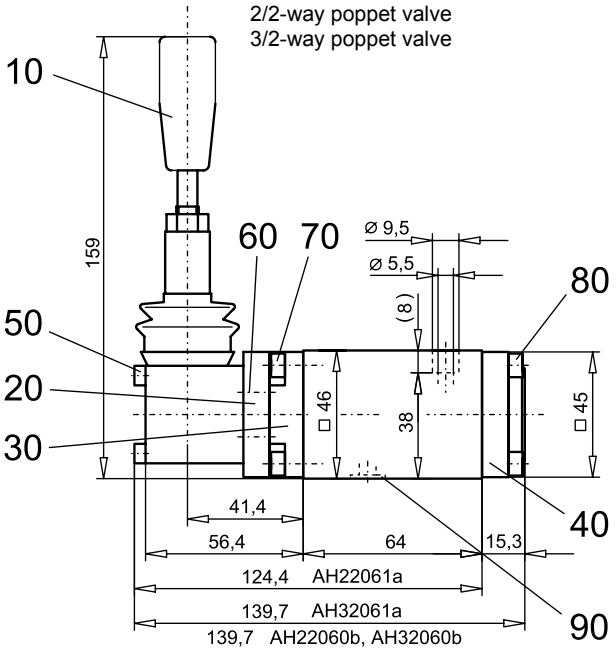


DIMENSIONS

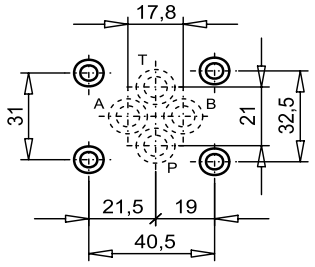
3/4-way poppet valve



2/2-way poppet valve
3/2-way poppet valve



(Hebel auf B-Seite / Lever on side B / Levier manuel au côté B)



PARTS LIST

Position	Article	Description
10	253.2000	Manual pilot head BHII
20	074.1802	Flange
30	074.2702	Flange
40	058.4215	Cover
50	246.1140	Socket head cap screw M4x40 DIN 912
60	246.1111	Socket head cap screw M4x10 DIN 912
70	246.2112	Socket head cap screw M5x12 DIN 912
80	246.2117	Socket head cap screw M5x16 DIN 912
90	160.2093	O-ring ID 9,25x1,78

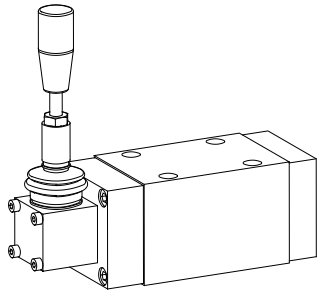
ACCESSORIES

Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Poppet valve manually operated
- **2/2-, 3/2- and 3/4-way construction**
- **Q_{max} = 80 l/min**
- **p_{max} = 350 bar**

NG10
ISO 4401-05



DESCRIPTION
Poppet valve, flanged design NG10 according to ISO 4401-05, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG10 series is the poppet valve cartridge NG10. See data sheett 1.11-2040.

FUNCTION
The valve is manual lever which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge typ poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

TYPE CODE

2/2- or 3/2-way construction	A	H	□	2	10	□	#	□
3/4-way construction	A	H	3	4	10		#	□

International standard interface ISO

Lever

2-way (connections) 2
3-way (connections) 3

2 position
4 position

Nominal size 10

Normally closed — Level on A-side — 1a
Normally open — Level on B-side — 0b

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG10 acc. to ISO 4401-05
Construction	Direct operated poppet valve
Operations	manually operated
Mounting	Flange, 4 mounting holes for socket head screws M6 x 65
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 9,5 Nm (quality 8,8)
Weight: 2/2-, 3/2-way	m = 3,6 kg
3/4-way	m = 4,4 kg
Volume flow direction	any (see characteristics)

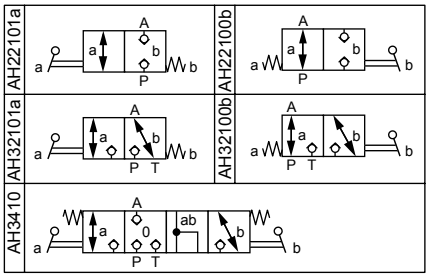
CONTROL MECHANICAL

Force	$F_{b\ max.}$ = 20–120 N (depending on flow direction and pressure)
Angle	α_b = 11°

HYDRUALIC SPECIFICATIONS

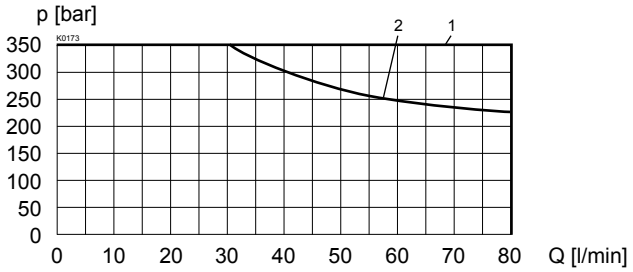
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20 ... +70 °C
Working pressure	p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 80 l/min see characteristics

SYMBOLS



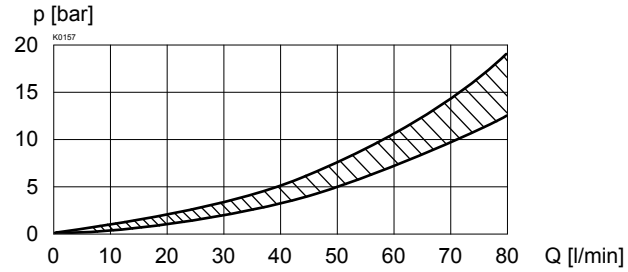
CHARACTERISTICS Oil viscosity υ = 30 mm²/s

p = f (Q) Performance limit



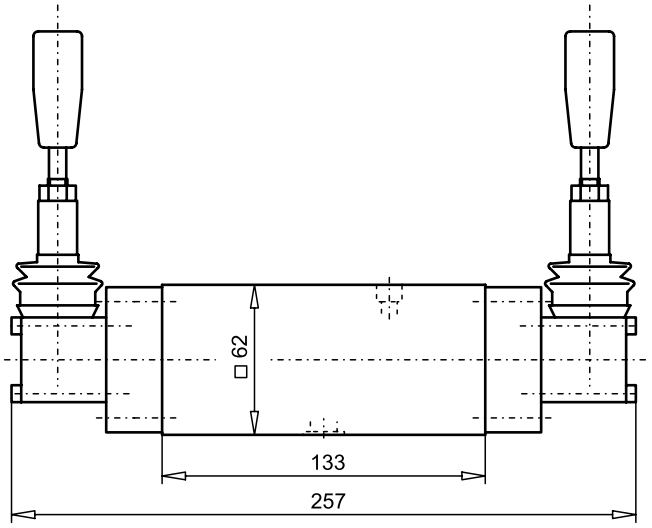
Type	Flow direction			
	P - A	A - T	A - P	T - A
AH22101a	1	-	1	-
AH22100b	1	-	2	-
AH32101a	1	2	1	1
AH32100b	1	1	2	1
AH3410	1	1	1	1

Δp = f (Q) Pressure loss / flow characteristics

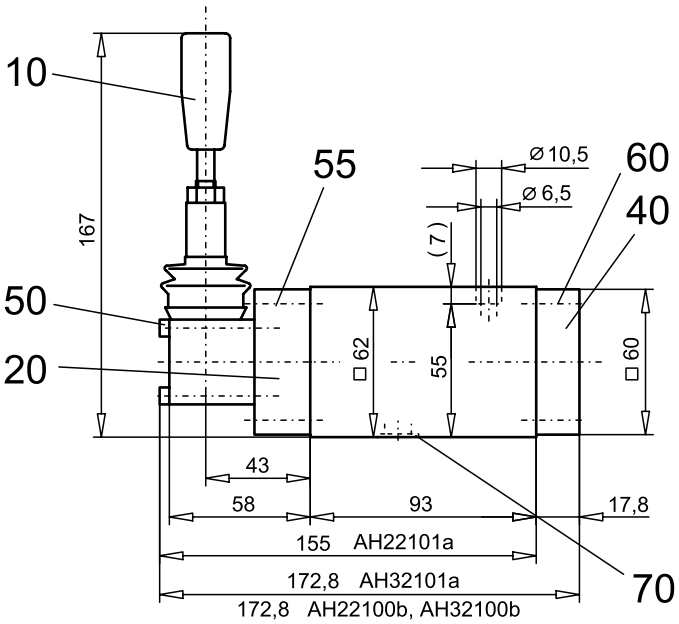


DIMENSIONS

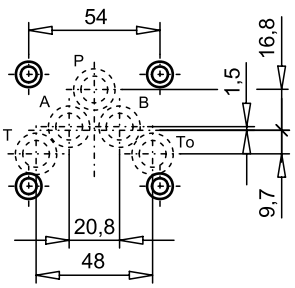
3/4-way poppet valve



2/2-way poppet valve
3/2-way poppet valve



(Hebel auf B-Seite / Lever on side B / Levier manuel au côté B)



PARTS LIST

Position	Artikel	Beschreibung
10	253.2000	Manual pilot head BHII
20	074.2813	Flange
40	059.2200	Cover
50	246.1140	Socket head cap screw M4 x 40 DIN 912
55	246.3125	Socket head cap screw M6 x 25 DIN 912
60	246.3121	Socket head cap screw M6 x 20 DIN 912
70	160.2140	O-ring ID 14 x 1,78

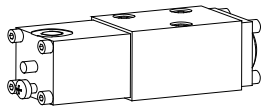
ACCESSORIES

Threaded connection plates, Multi-flange subplates and
Longitudinal stacking system see Register 2.9

Technical explanation see data sheet 1.0-100

Poppet valve pneumatically operated
- **2/2-, 3/2- and 3/4-way construction**
- **Q_{max} = 15 l/min**
- **p_{max} = 350 bar**

NG4-Mini®



DESCRIPTION
Poppet valve, flanged design NG4-Mini according to Wandfluh standard, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG4-Mini series is the poppet valve cartridge NG4. See data sheet 1.11-2020.

FUNCTION
The valve is direct operated by a pneumatically operated which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time. Mini-4 valves are used where both, reduced dimensions and weight are important.

TYPE CODE

2/2- or 3/2-way construction	B	K	☐	2	04	☐	#	☐
3/4-way construction	B	K	3	4	04		#	☐

Interface acc. to Wandfluh standard

pneumatically operated

2-way (connections) 2
3-way (connections) 3

2 position
4 position

Nominal size NG4-Mini

Normally closed — Pilot head on A-side 1a
Normally open — Pilot head on B-side 0b

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG4-Mini acc. to Wandfluh standard
Construction	Direct operated poppet valve
Operations	pneumatically operated
Mounting	Flange, 4 mounting holes for socket head screws M5x40
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20 ... +50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 5,5 Nm (Quality 8,8)
Weight: 2/2-, 3/2-way	m = 0,9 kg
3/4-way	m = 1,2 kg
Volume flow direction	any (see characteristics)

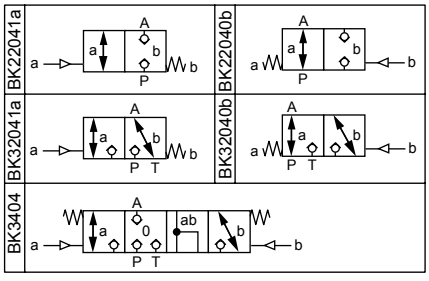
CONTROL PNEUMATIC

Min. pilot pressure	$p_{st\ min.}$ = see characteristics
Max. pilot pressure	$p_{st\ max.}$ = 8 bar
Control volume	V_{st} = 2,5 cm³

HYDRAULIC SPECIFICATIONS

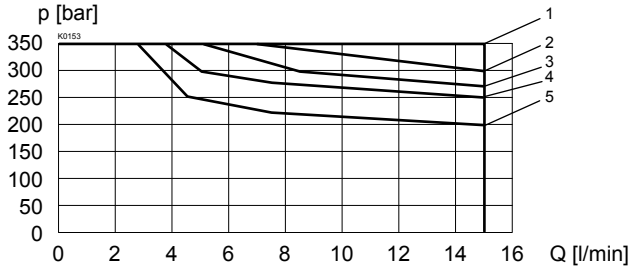
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 350 bar
Max. volume flow	Q_{max} = 15 l/min see characteristics

SYMBOLS



CHARACTERISTICS Oil viscosity υ = 30 mm²/s

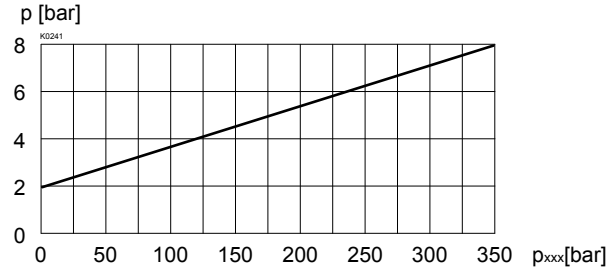
p = f (Q) Performance limit



Type	Flow direction			
	P - A	A - T	A - P	T - A
BK22041a	1	-	2	-
BK22040b	1	-	4	-
BK32041a	1	3	5	1
BK32040b	1	4	5	1
BK3404	1	1	2	2

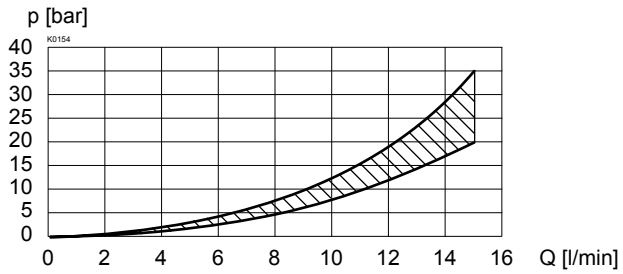
$p_{st\ min}$ = f (p_{xxx}) Min. Pilot pressure characteristics at Q_{max}

p_{xxx} = pressure in line xxx (see table)



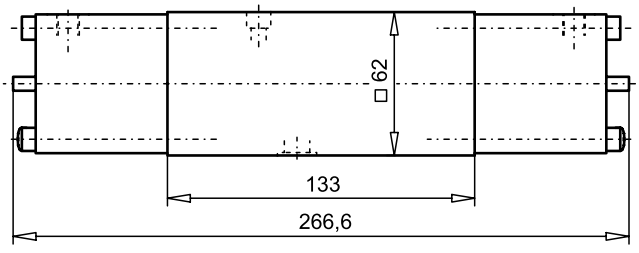
Type	Flow direction			
	P - A	A - T	A - P	T - A
BK22041a	A	-	A	-
BK22040b	A	-	A	-
BK32041a	A	A	A	A
BK32040b	A	A	A	A
BK3404	A	T	A	T

Δp = f (Q) Pressure loss/flow characteristics



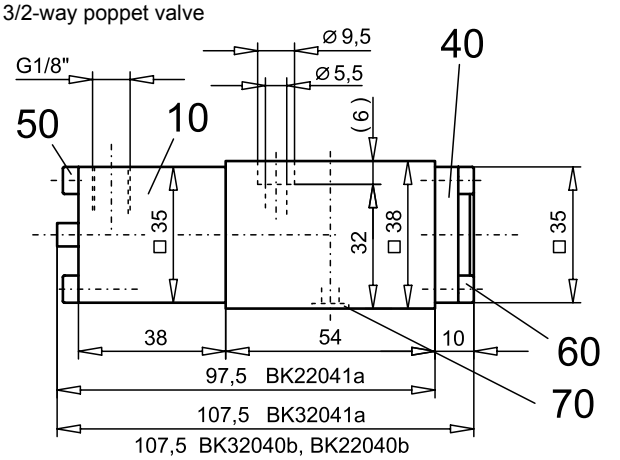
DIMENSIONS

3/4-way poppet valve

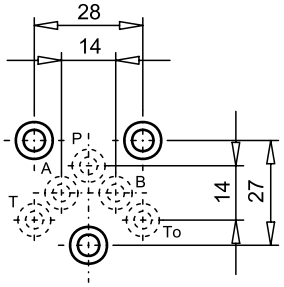


2/2-way poppet valve

3/2-way poppet valve



(Steuerkopf auf B-Seite / Pilot head on side B / Tête piloté au côté B)



PARTS LIST

Position	Article	Description
10	254.2000	Pneumatic pilot head BKII
40	057.4201	Cover
50	246.1146	Socket head cap screw M4 x 45 DIN 912
60	246.1113	Socket head cap screw M4 x 12 DIN 912
70	160.2052	O-ring ID 5,28 x 1,78

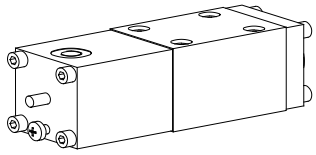
ACCESSORIES

Threaded connections plates, Multi-flange subplates and Longitudinal stacking system see register 2.9

Technical explanation see data sheet 1.0-100

Poppet valve pneumatically operated
- **2/2-, 3/2- and 3/4-way construction**
- **Q_{max} = 40 l/min**
- **p_{max} = 350 bar**

NG6
ISO 4401-03



DESCRIPTION
Poppet valve, flanged design NG6 according to ISO 4401-03, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG6 series is the poppet valve cartridge NG6. See data sheet 1.11-2030.

FUNCTION
The valve is direct operated by a pneumatically operated which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

TYPE CODE

2/2- or 3/2-way construction	A	K	□	2	06	□	#	□
3/4-way construction	A	K	3	4	06		#	□

International mounting interface ISO

Pneumatically operated

2-way (connections) 2
3-way (connections) 3

2 position
4 position

Nominal size 6

Normally closed — Pilot head on A-side 1a
Normally open — Pilot head on B-side 0b

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG6 acc. to ISO 4401-03
Construction	Direct operated poppet valve
Operations	pneumatically operated
Mounting	Flange, 4 mounting holes for socket head screws M5x45
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 5,5 Nm (quality 8,8)
Weight: 2/2-, 3/2-way	m = 1,7 kg
3/4-way	m = 2,5 kg
Volume flow direction	any (see characteristics)

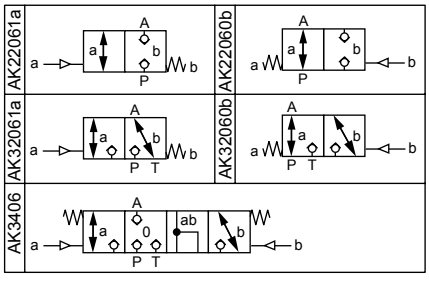
CONTROL PNEUMATIC

Min. pilot pressure	$p_{st' min.}$ = see characteristics
Max. pilot pressure	$p_{st' max.}$ = 8 bar
Control volume	V_{st} = 7 cm³

HYDRAULIC SPECIFICATIONS

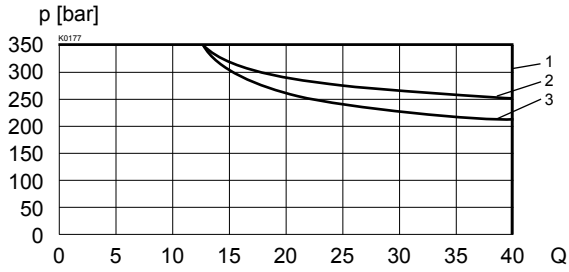
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20… +70 °C
Working pressure	p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 40 l/min see characteristics

SYMBOLS



CHARACTERISTICS Oil viscosity υ = 30 mm²/s

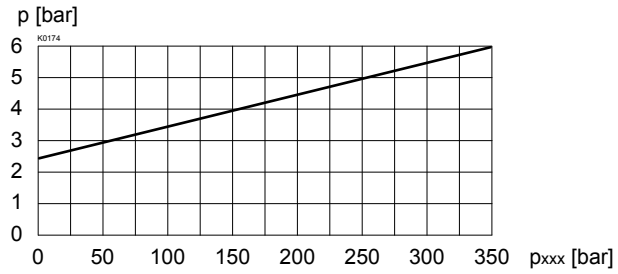
p = f (Q) Performance limit



Type	Flow direction			
	P - A	A - T	A - P	T - A
AK22061a	1	-	1	-
AK22060b	1	-	3	-
AK32061a	1	2	1	1
AK32060b	1	1	2	1
AK3406	1	1	1	1

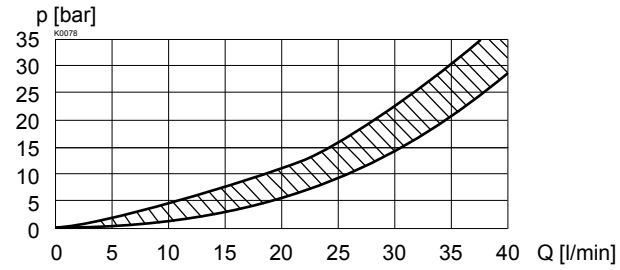
$p_{st\ min}$ = f (p_{xxx}) Min. Pilot pressure characteristics at Q_{max}

p_{xxx} = pressure in line xxx (see table)



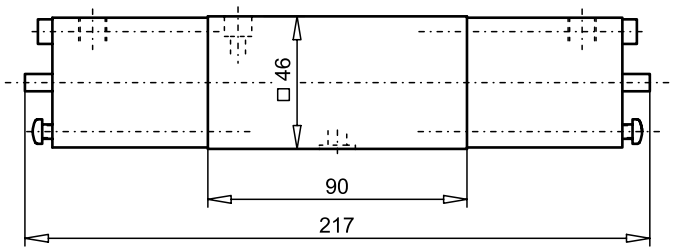
Type	Flow direction			
	P - A	A - T	A - P	T - A
AK22061a	A	-	A	-
AK22060b	A	-	A	-
AK32061a	A	A	A	A
AK32060b	A	A	A	A
AK3406	A	T	A	T

Δp = f (Q) Pressure loss/flow characteristics

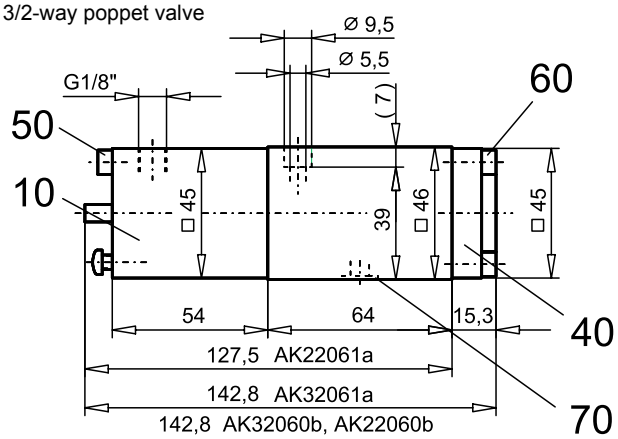


DIMENSIONS

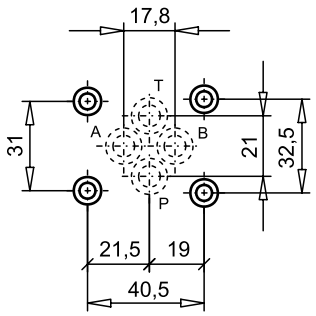
3/4-way poppet valve



2/2-way poppet valve
3/2-way poppet valve



(Steuerkopf auf B-Seite / Pilot head on side B / Tête piloté au côté B)



PARTS LIST

Position	Article	Description
10	254.4050	Pneumatic pilot head CKII
40	058.4215	Cover
50	246.2160	Socket head cap screw M5x60 DIN 912
60	246.2117	Socket head cap screw M5x16 DIN 912
70	160.2093	O-ring ID 9,25x1,78

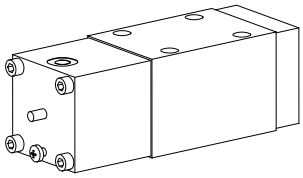
ACCESSORIES

Threaded connections plates, Multi-flange subplates and Longitudinal stacking system see register 2.9

Technical explanation see data sheet 1.0-100

Poppet valve pneumatically operated
- **2/2-, 3/2- and 3/4-way construction**
- **Q_{max} = 80 l/min**
- **p_{max} = 350 bar**

NG10
ISO 4401-05



DESCRIPTION
Poppet valve, flanged design NG10 according to ISO 4401-05, available as a 2/2 or 3/2-way valve (normally open or closed) and as a 3/4-way valve (normally closed). The central functioning element of all directly controlled poppet valves in the NG10 series is the poppet valve cartridge NG10. See data sheet 1.11-2040.

FUNCTION
The valve is direct operated by a pneumatically operated which in turn either opens or closes the poppet. The design of the poppet spool, which is equal in surface area on both sides and thus pressure balanced, means there are no undue opening and closing hydraulic forces. Due to this the oil flow through the poppet valve is possible in both directions. The valve is tight in both flow directions.

APPLICATION
Wandfluh poppet valves can be used anywhere absolutely leak tight closing functions are important. Completely sealed loading, gripping and clamping operations are all important functions which Wandfluh poppet valves can perform. Cartridge type poppet valves can be neatly accommodated in valve blocks. From a mechanical and functional point of view, poppet valves can replace slide valves at any time.

TYPE CODE

2/2- or 3/2-way construction	A	K	☐	2	10	☐	#	☐
3/4-way construction	A	K	3	4	10		#	☐

International mounting interface ISO

Pneumatically operated

2-way (connections) [2]
3-way (connections) [3]

2 position
4 position

Nominal size 10

Normally closed — Pilot head on A-side [1a]
Normally open — Pilot head on B-side [0b]

Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Description	2/2-, 3/2- and 3/4-way poppet valve
Nominal size	NG10 acc. to ISO 4401-05
Construction	Direct operated poppet valve
Operations	pneumatically operated
Mounting	Flange, 4 mounting holes for socket head screws M6 x 65
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20…+50 °C
Mounting position	any, preferable horizontal
Fastening torque	M_D = 9,5 Nm (quality 8,8)
Weight: 2/2-, 3/2-way	m = 4,1 kg
3/4-way	m = 5,4 kg
Volume flow direction	any (see characteristics)

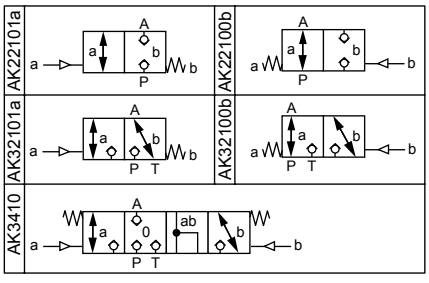
CONTROL PNEUMATIC

Min. pilot pressure	$p_{st' min.}$ = see characteristics
Max. pilot pressure	$p_{st' max.}$ = 8 bar
Control volume	V_{st} = 10 cm³

HYDRAULIC SPECIFICATIONS

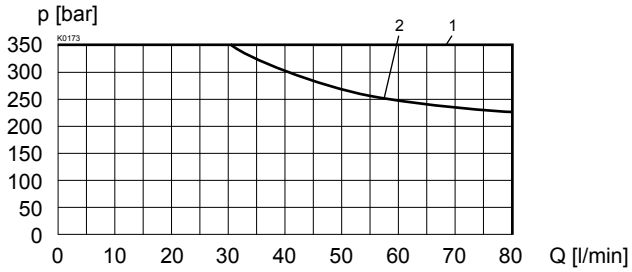
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade ß10…16≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 350 bar
Max. volume flow	$Q_{max.}$ = 80 l/min see characteristics

SYMBOLS



CHARACTERISTICS Oil viscosity υ = 30 mm²/s

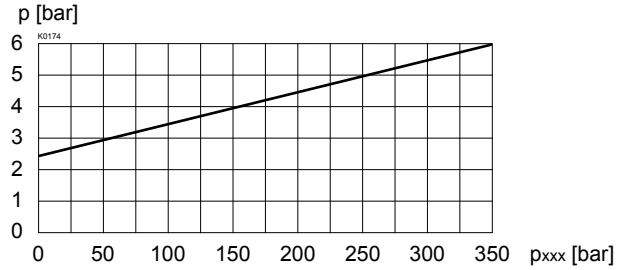
p = f (Q) Performance limit



Type	Flow direction			
	P - A	A - T	A - P	T - A
AK22101a	1	-	1	-
AK22100b	1	-	2	-
AK32101a	1	2	1	1
AK32100b	1	1	2	1
AK3410	1	1	1	1

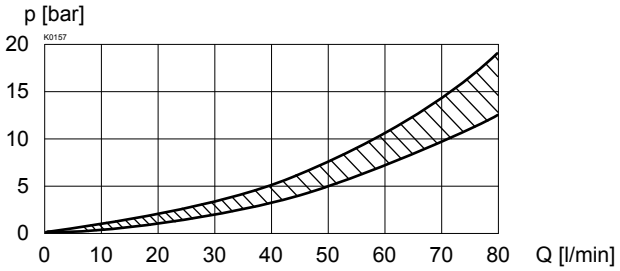
$p_{st\ min}$ = f (p_{xxx}) Min. Pilot pressure characteristics at Q_{max}

p_{xxx} = pressure in line xxx (see table)



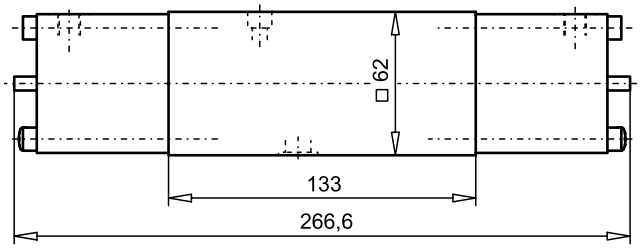
Type	Flow direction			
	P - A	A - T	A - P	T - A
AK22101a	A	-	A	-
AK22100b	A	-	A	-
AK32101a	A	A	A	A
AK32100b	A	A	A	A
AK3410	A	T	A	T

Δp = f (Q) Pressure loss/flow characteristics



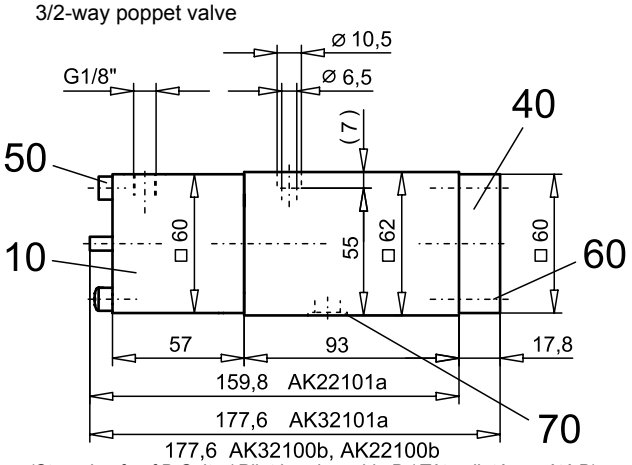
DIMENSIONS

3/4-way poppet valve

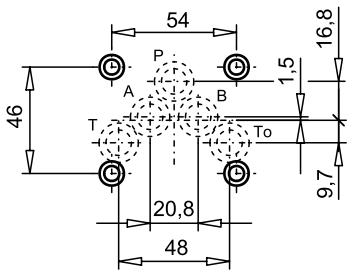


2/2-way poppet valve

3/2-way poppet valve



(Steuerkopf auf B-Seite / Pilot head on side B / Tête piloté au côté B)



PARTS LIST

Position	Article	Description
10	254.5000	Pneumatic pilot headf AKI
40	059.2200	Cover
50	246.3166	Socket head cap screw M6 x 65 DIN 912
60	246.3121	Socket head cap screw M6 x 20 DIN 912
70	160.2140	O-ring ID 14,00 x 1,78

ACCESSORIES

Threaded connections plates, Multi-flange subplates and Longitudinal stacking system see register 2.9

Technical explanation see data sheet 1.0-100